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WITH
AN ABSTRACT OF THE PROCEEDINGS AT BOARD AND GENERAL
MEETINGS, AND THE PREMIUMS OFFERED BY
THE SOCIETY IN 1928

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TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

FEEDING STANDARDS.

By PROFESSOR J. A. SCOTT WATSON, University of Oxford.

IT is many years since the earliest attempts were made to place the rationing of farm animals upon a scientific basis, and to devise feeding standards for the guidance of the practical stockman. Many of the earlier efforts fell very far short of success. They were necessarily based upon imperfect scientific knowledge, and sometimes upon too narrow a foundation of practical experience; and when the farmer found, as he did find, that this or that system presumed to condemn methods that had proved satisfactory in practice, or otherwise conflicted with his experience, he naturally adopted an attitude of distrust towards all so-called scientific systems. There is still a good deal to be said for this attitude, for it cannot be denied that there are great gaps in our knowledge of nutrition. Fairly rapid progress is, however, being made, and it is worth while, now and again, to take stock of our knowledge and to survey the extent of our ignorance. Such is the purpose of the present article.

Before we can attempt to ration scientifically, we must understand the various requirements of our animals, and we must be able to measure the value, in all important respects, of the materials that we propose to use as foods. So far as we know at present, there are five aspects of the subject which are capable of more or less exact scientific treatment—which are, that is to say, capable of being reduced to figures. In the first place, the animal requires a supply of energy, and the various feeding-stuffs supply energy in varying amounts. Again, at least three groups of substances—proteins, minerals, and vitamins—are necessary to healthy life, and the quantities

required can be measured with some degree of approximation. Lastly, the total quantity of food that the animal can consume in a day or in a week can be reduced to a basis of figures. Here it is proposed to discuss three of these aspects—energy, protein, and bulk.

ENERGY VALUES AND ENERGY REQUIREMENTS.

The animal uses up energy in the maintenance of its life processes—for example, in working its heart and its lungs, and in maintaining the tonus or stretch of its muscles. This may be called the resting maintenance requirement, and is comparable to the energy required to keep the engine of a car running when the car itself is at rest. In addition, all animals spend a certain amount of energy in voluntary movements, and a certain minimum of exercise is necessary to health; for practical purposes, then, an allowance for such necessary movement must be included in the maintenance requirement. It is a rather common misconception to suppose that the main function of the maintenance energy is to provide for the production of heat. It is, of course, quite true that the temperature of the body must be kept at a certain level; but normally, or at least very often, enough heat is produced for this purpose by the working of the heart, lungs, digestive organs, &c., and there is no need for the animal to “burn” food specially in order to keep itself warm. Just so a motor engine, when it is running, produces enough spare heat to keep itself warm, so that there is no need to burn petrol specially for that purpose. If it happens that the spare heat produced by the working of the internal organs is not sufficient to maintain the body temperature, then the animal will stamp or run or shiver in order to increase the production of heat, and it is only when such symptoms appear that it can be said that energy is being expended primarily for heat production. With well-fed animals under ordinary conditions, variations in the temperature of the air do not materially affect the maintenance requirement. Young pigs and clipped and groomed horses will, of course, suffer from cold much more readily than well-haired cattle or heavily woolled sheep.

The total energy value of a feeding-stuff may be found by burning it completely in air, and estimating the amount of heat given out. However, energy values obtained in this way may be quite useless as indications of feeding value, because it is only the energy of the digestible portions that can conceivably be of use. Hence the first step in arriving at a useful figure is to measure the energy value of the dung and other excreta, and to subtract this from the total energy value of the food. The difference is called the metabolisable

energy, or sometimes the gross digestible energy. But there is a further important point. The animal spends a considerable amount of energy in chewing and digesting the food, and a further amount is lost through the fermentations that go on within its digestive tract. The balance, after allowing for this expenditure and loss, is what is available for the working of the animal's organs or for producing meat or milk or work, and is called the net energy value of the food.

NET ENERGY VALUES.

The net energy values of a variety of foods have been determined or calculated by various people in various ways, and have been expressed in various forms. Armsby and his fellow-workers in America determined a large number by actual heat experiments with animals, generally kept at a little above or below maintenance level. They expressed their results in heat units—that is, in calories or therms. Kellner and his colleagues in Germany also made direct experiments, chiefly with fattening cattle, estimating the amount of fat stored by the very accurate method of measuring the amount of oxygen breathed in and the amount of carbonic acid gas breathed out. Kellner expressed his results in terms of starch equivalents, a pound of starch equivalent being the net energy value, to the fattening steer, of a pound of digested starch (1071 calories). Expressed in another way, the pound of starch equivalent is the amount of net energy necessary to enable a bullock to store a quarter of a pound of fat. It must, however, be borne in mind that the actual net energy supplied by a pound of starch equivalent is not constant for all animals. It is substantially higher in the case of milk production (about 1350 calories), and in the case of the pig (1500 calories). Lastly, the Scandinavian investigators have devised a system of comparing feeding-stuffs on a basis of fodder units, the fodder unit being equal to a pound of average barley. The Scandinavian figures have been arrived at by averaging the results of repeated large scale practical experiments, chiefly with dairy cows and pigs. There is, indeed, this difficulty about the Scandinavian figures, that they measure only the gross effect of the food in producing live-weight increase or milk, and do not determine what part of that effect is due to the energy value and what to the protein or mineral content. Hence, with regard to foods of very high protein or mineral content, the figures cannot be compared to those of Kellner or Armsby, which indicate energy values only.

With the last noted exceptions, the three sets of figures ought, if they are reduced to a common basis, to show some measure of agreement. In the following table the starch

equivalents of the various foods are set down in the first column; those in the second column are derived from Hansson's table of fodder units, on the assumption that 100 lb. of barley has a starch equivalent of 71 lb.; the third gives Armsby's figures for ruminants, reduced to the same terms by taking 1 lb. of starch equivalent as 1071 Calories of net energy:—

COMPARATIVE NET ENERGY VALUES OF FEEDING-STUFFS ACCORDING TO KELLNER, HANSSON, AND ARMSBY RESPECTIVELY.

	Kellner.	Hansson.	Armsby.
<i>Grain—</i>			
Barley	71	71	84
Oats	60	59	63
Wheat	72	71	85
Maize	81	75	80
Beans	66	71	68
<i>Cereal By-Products—</i>			
Broad Bran . . .	42	59	49
Fine Middlings . .	69	71	70
Dried Brewers' Grains .	49	55	50
Maize Gluten Feed .	76	75	75
Rice Meal . . .	72	66	61 ¹
<i>Oil Cakes—</i>			
Uncorticated Cotton .	41	51	—
Decorticated Cotton .	71	83	84
Linseed	74	79	80
Palm Kernel . . .	75	71	87
Decorticated Earth Nut .	73	89	87
<i>Hays—</i>			
Medium Meadow . .	31	28	38
Average Clover . .	32	32	36
Average Timothy . .	29	28	40
<i>Straws—</i>			
Oat	17	18	32
Barley	19	19	33
Wheat	11	14	7
<i>Roots—</i>			
Swedes average . .	7	7.9	7.9
Mangels average . .	7	7.1	5.3
Potatoes	18	18	17

¹ It is doubtful whether this figure applies to the same grade of material as the others.

In general it may be said that the German and Danish figures are in fairly close agreement. The Danish figures are rather higher for the protein-rich foods, like cotton and earth-nut cakes, and a little lower in the case of materials like maize and rice meal, which are very poor in protein; this is what might have been expected. The only serious disagreement is with regard to bran, which in the Danish tables is given the same figure as oats, while in Kellner's list its value is little more than two-thirds that of oats. Armsby's figure is nearly midway between.

With regard to Armsby's figures the first point to note is that on the average they are somewhat higher than those of Kellner; apart from this there are a number of curious discrepancies. Thus, Armsby gives barley a higher net energy value than maize, and gives a very high figure for palm kernel cake. It is, however, when we come to the coarse fodders, and particularly to oat and barley straws, that the disagreement becomes really pronounced. It is, of course, well known that such materials are very variable in nutritive value, according to the conditions under which the crop is grown and the stage of ripeness at which it is cut. But there is no particular reason to suppose that American samples should have consistently higher feeding values than European. Nor do Armsby's figures agree with the ordinary practical experience of this country. According to Armsby, a 9 cwt. fattening bullock fed on 20 lb. oat straw, 50 lb. Swedes, and 2 lb. linseed cake ought to make a live-weight increase of over 2 lb. per day, whereas according to Kellner the live-weight increase would be under 1 lb. We know very well that an increase of 2 lb. would not be obtained on such a ration, even in the best feeding districts, and that for the average district the estimate based on Kellner's figures would be much nearer the truth. The same general conclusion, that Armsby's figures for the coarse fodders are too high, is forced upon one by experience in other directions. Professor Wood,¹ in his last published tables, has adopted figures intermediate between those of Kellner and Armsby, allotting to barley straw, for example, a starch equivalent of 24, and for good average hay a starch equivalent of 37. But it is difficult to see that he has made out a case even for this.

The figures commonly used in this country² as a basis for the calculation of rations are those given in the first column. How accurately do they represent the facts? In the first place, it should be observed that they apply, strictly speaking, only to ruminant animals—that is, to cattle, sheep, and

¹ 'Animal Nutrition.' 2nd edition. 1927.

² Fuller lists are available in various publications—*e.g.*, the 'Report of the Departmental Committee on the Rationing of Dairy Cows.' Ministry of Agriculture. 1925.

goats. Next it may be said that the figures for the various concentrates and roots are fairly accurate, as applied to average samples. Those for the coarse fodders are somewhat more doubtful, but there is not sufficient evidence to show that a material change would be justified. A real difficulty is, however, encountered in the wide differences in feeding value that obtain as between different samples of the coarse fodders, and also between samples of roots grown in different localities. There is general agreement, for example, that really choice hay may have twice the feeding value of a poor and heavily weathered sample; the starch equivalents vary, according to Kellner, from 19 to 40. Probably a choice quality of north-country oat straw might have a figure of 25, while a tough and over-ripe straw grown in a hot climate might fall as low as 14. Again, it might probably be safe to take a starch equivalent of 9 for Aberdeenshire grown Swedes, as against a figure of 6 for those produced in notoriously poor feeding districts. Such an assumption can be justified on the ground of analysis. It is clear, then, that as regards the bulky home-grown foods there is considerable room for error, and that knowledge of the actual material to be fed, as well as some local experience, are necessary if reasonable accuracy is to be attained.

As regards the applicability of the starch equivalent figures to other animals, we must bear in mind that the process of digestion in the horse and pig is fundamentally different from that in the ruminant. In the latter case the food undergoes a considerable amount of fermentation in the paunch before real digestion starts. Hence easily digestible foods are subjected to a good deal of wastage. Such substances are just as fully digested by the horse and pig, and suffer far less waste in the process. On the other hand, the process of digestion in the ruminant deals more effectively with coarse and fibrous foods. This is illustrated by the following figures of Kellner, representing the average digestibility of typical foods by the ruminant, horse, and pig respectively:—

PERCENTAGE DIGESTIBILITY OF THE ORGANIC MATTER OF TYPICAL FOODS IN EXPERIMENTS WITH RUMINANTS, HORSES, AND PIGS RESPECTIVELY.

	Ruminant.	Horse.	Pig.
Maize	90	89	90
Barley	86	87	82
Oats	70	69	71
Meadow Hay average	61	50	—
Red Clover Hay average	56	51	—
Red Clover—green	68	—	40
Lucerne—green	64	—	40
Wheat Straw	42	21	—
Wheat Chaff	36	—	23

In the case of pigs, the energy values of hay, straw, and the like are of no practical interest, because such things are not fed. With regard to green stuffs, such as clover and vetches, we may safely assume that the net energy values are relatively low, but no actual figures are available. Tables of net energy values of the commoner pig foods are published both by Armsby and by Wood, and in the following table these figures are compared with Kellner's starch equivalents. Armsby's and Wood's figures have been converted on the assumption that 1500 calories are equal to 1 lb. of starch equivalent.

COMPARATIVE NET ENERGY VALUES OF FEEDING-STUFFS FOR PIGS ACCORDING TO ARMSBY AND WOOD, COMPARED WITH KELLNER'S STARCH EQUIVALENTS.

	Starch equivalent.	Armsby.	Wood.
Barley	71	71	71
Maize	81	79	80
Wheat	72	73	73
Peas	69	82	66
Bran	42	50	—
Fine Middlings	69	69	71
Potatoes	18	16.5	16.5
Skim Milk	9	9.8	9.3

Apart from Armsby's higher figures for peas and bran, there is fairly close agreement throughout. It therefore

appears that so long as we confine our attention to the less fibrous types of food, there is no reason why we should not base our calculations of pig rations upon Kellner's figures.

Very few determinations of net energy values have been made for the horse.

The following are a few of Armsby's estimates converted on the same basis as the last (1 lb. starch equivalent = 1500 calories net energy), and compared with Kellner's starch equivalents :—

COMPARATIVE NET ENERGY VALUES FOR HORSES.

	Starch equivalents.	Armsby.
Oats	60	62
Maize	81	75
Maize Meal	81	88
Beans	66	75
Linseed Cake	74	68
Carrots	9	11
Red Clover Hay	32	27
Timothy Hay	29	18
Wheat Straw	11	-14

So far as the figures go they confirm the conclusion based on the digestibility figures—that is, they indicate that the coarse fodders have relatively low net energy values for the horse. It should be noted that the net energy value of wheat straw is a minus quantity; this means that more energy is spent in its digestion than it yields in available form. Hence, regarded as a source of energy for work or growth, it is considerably worse than useless to the horse :—

To sum up this aspect of the business, we may say—

- (1) That the ordinary tables of starch equivalents used in this country do give with fair accuracy the relative net energy values of all foods to the ruminant animal.
- (2) That as regards the more easily digestible foods the starch equivalents may be applied without any great inaccuracy to the horse and pig.
- (3) That fibrous materials (hay, straw, chaff, and green foods) have relatively much lower net energy values for the horse and pig than for ruminants; and that, therefore, it is unsound to use the starch equivalents of these foods as a measure of their value to non-ruminant animals.

ENERGY REQUIREMENTS—MAINTENANCE.

Somewhere about half of the total food consumed by the average farm animal is used up merely in keeping it alive, and thus brings no direct return. Any system of rationing which pretends to scientific accuracy must clearly take account of the maintenance requirements, which constitute a first charge upon the food supply.

So far as concerns cattle, Kellner's figure, which is generally accepted in this country as expressing the maintenance energy requirement, is 6 lb. starch equivalent per day for an animal of 1000 lb. (or approximately 9 cwt.) live-weight. Armsby's standard figure for an animal of the same size is 6000 calories of net energy, which is equal to 5.6 lb. starch equivalent. The two authorities are, therefore, in fair agreement. However, as might be expected, the actual requirement varies between one animal and another. Kellner's figure applies to an animal "at rest," while Armsby's calculations were based on the supposition that the animal spent twelve hours standing and twelve hours lying each day. However, it is found that even when movement is restricted as carefully as possible, the degree to which the animal actually rests may vary a good deal, and this affects the energy consumption materially. Even the difference between standing and lying makes, in the case of cattle, a difference of the order of 30 or 40 per cent. The value of a quiet temperament, and the importance of giving cattle the fullest opportunities for rest, are therefore obvious.

In one of Kellner's original experiments mature steers of an average live-weight of 1527 lb. were fed on a ration having a calculated fat-producing value of 2.44 lb. per day—that is to say, the ration would, if it had been fed to cattle that were already getting a maintenance ration, have enabled them to lay on fat at this rate. The actual amount of fat produced was .92 lb. Kellner therefore concluded that the cattle required for maintenance as much energy as would have sufficed to produce the difference—that is, 1.52 lb. of fat. This (multiplied by four) gives 6.08 lb. of starch equivalent, and if this is corrected to a live-weight of 1000 lb. we get a maintenance requirement of 4.6 lb. of starch equivalent per day. Some thirty-two respiration experiments of this kind have been carried out in all. The average result, corrected to twelve hours standing and twelve hours lying, is 5.45 lb. starch equivalent. The highest result obtained was 6.8 lb. and the lowest 3.9 lb., the last being for a cow of quite exceptionally quiet disposition. It may, therefore, be said that for the average animal Kellner's figure is on the safe side, and allows a certain small margin for movement and exercise.

In all the experiments above noted the cattle were in lean or medium condition. It is a matter of some importance to know whether, as might perhaps be expected, the maintenance requirement rises as the animal becomes fat. Unfortunately, the actual experimental evidence is very scanty. One respiration test by Kellner gave a figure for a half fat steer of 7.4 lb.; while Evvard, by the less exact live-weight method, got a figure of 8.5 lb. for a lot of fat cattle. Such as they are, these figures indicate that the energy required for maintenance rises considerably as fattening proceeds, and that the standard figure used in this country may be too low for cattle in the later stages of the fattening process.

The energy required for maintenance by animals of different sizes is proportional not to the weight of the body, but to the area of the body surface. This "surface law," applied to cattle, gives the following figures for animals of different weights :—

Live-weight— Cwt.	Maintenance— Pounds starch equivalent.	Live-weight—Cwt.	Maintenance— Pounds starch equivalent.
3	2.9	10	6.5
4	3.5	11	6.9
5	4.0	12	7.3
6	4.5	13	7.7
7	5.0	14	8.1
8	5.6	15	8.5
9	6.0	16	8.9

The maintenance requirement of sheep has been the subject of relatively few investigations, and the results are far from being in close agreement. In the earliest respiration experiment carried out by Henneberg as long ago as 1870, a four-year-old wether of a German breed, weighing 106 lb., was fed on 2½ lb. of good meadow hay, and was found to lay on the equivalent of a twentieth of a pound of fat per day. From this experiment Kellner deduces a maintenance requirement of .77 lb. starch equivalent per 100 lb. live-weight. Armsby's estimate from the same data is .72 lb. Averaging all the available data, Kellner arrived at a figure of .83 lb.; Armsby made a lower estimate, equal to .73 lb. of starch equivalent, but he admitted that there was a considerable amount of guess-work in his calculation. On the other hand, Wood and Capstick, in recent experiments at Cambridge, have obtained the very much higher figure of 1.25 lb. The discrepancy is so considerable that a ration calculated on Kellner's figure

to produce 2 lb. live-weight increase per week would, according to the Cambridge result, produce less than 1 lb. per week.

Theoretically, Wood's figure appears to be much the more probable. Assuming that the average figure as actually determined for cattle applies to ruminants generally, and that the "surface law" holds for animals of all sizes, a sheep of 100 lb. live-weight would, in fact, require about 1.2 lb. of starch equivalent daily for maintenance. It has been argued that the sheep's fleece effects a saving of heat as compared with the coat of a bullock; but, as was pointed out at the beginning of the article, the primary function of the maintenance energy is to work the animal machine and not to maintain the body temperature; and there is no indication that the machine works more slowly in the case of the sheep. On the other hand, it does seem that, in practice, feeding sheep put on more weight than would be expected on a calculation based on the Cambridge figure. The question, then, cannot be taken as settled.

The pig has been found to provide an easier experimental problem, and the various determinations of the resting maintenance requirements are in close agreement. A number of results collected by Armsby range between 1220 and 1307 Calories, with an average of 1249 per 100 lb. live-weight; these results are for twenty-four hours. Professor Wood, restricting his consideration to the period when the pig was actually at rest (lying), got a somewhat lower result of 1105 Calories. The former average figure, on the assumption that a pound of starch equivalent supplies 1500 Calories, is equal to .83 lb. starch equivalent per 100 lb. live-weight per day. However, there are three other points that affect the question in practice. Firstly, the figures given apply to a fasting animal kept at or above a temperature of 68° Fahrenheit, the temperature of a fairly warm summer day. Above this temperature the maintenance requirement is constant, but at lower temperatures it rises considerably. On the other hand, a pig receiving food produces, in the work of digestion, a certain amount of spare heat, which is available to maintain the body temperature. The point at which the pig begins to "burn" food for the purpose of keeping itself warm thus depends on the amount of food it is receiving, and also on the nature of that food. Coarse bulky foods produce more spare heat in proportion to their net energy value than easily digestible foods. Roughly speaking, the point would be about 50° for an animal on a ration only a little above maintenance level, about 40° for a store pig, and about freezing-point (32°) for a mature pig on a full fattening ration. In the second place, Professor Wood has shown that the "surface

law " does not apply strictly to all pigs, young growing animals having a relatively high maintenance requirement ; and lastly, in practice, a very considerable addition has to be made to the theoretical maintenance requirement to meet the expenditure of energy in movement. This may ordinarily amount, according to Professor Wood, to 1000 Calories, or two-thirds of a pound of starch equivalent per day ; and with bad management (whereby, for instance, the pigs have to fight for their food and get insufficient opportunities for rest) the expenditure on movement may amount to double this figure.

Making the necessary correction for young pigs and a reasonable addition for movement, Professor Wood suggests the following allowances for maintenance :—

Live-weight.	Maintenance energy— Pounds starch equivalent per day.
50	1·0
100	1·9
150	2·2
200	2·5
250	2·6
300	2·7

The resting maintenance requirement of the horse, as measured in Calories of net energy, is lower than that of cattle—viz., about 4100 Calories per 1000 lb. live-weight. This, however, is not particularly helpful because, as has been noted, our information on the subject of the net energy values of feeding-stuffs for horses is very incomplete. However, if we take the mean of Armsby's determinations for clover and Timothy hays (340 Calories of net energy per pound), the figure would imply that 12 lb. of such hay would represent a maintenance ration for a 1000 lb. horse ; 15 lb. would be the corresponding figure for an average farm horse of 1500 lb. weight. It is certain that such a ration would not supply enough heat to maintain the body temperature in cold weather, but we have no precise information about the actual heat expenditure in relation to the temperature of the air. Probably in any case the figures would differ widely according to the condition of the animal's coat. Incidentally, the practical maintenance requirement must vary within wide limits according to the temperament of the animal, and the policy in maintaining an idle animal must depend on the degree of " fitness " that is required. The animal cannot be kept in

condition for hard or fast work without a good deal of exercise, which involves a corresponding expenditure of food.

ENERGY REQUIREMENTS—PRODUCTION.

That portion of the ration that is surplus to maintenance requirements is available for production. It is true, of course, that a deep-milking cow or a hard-worked horse will, if fed on an inadequate ration, produce milk or work respectively for a time at the expense of body tissues, but such a process is necessarily only temporary. Unless there are strong economic reasons for effecting a temporary saving of food, the principle to be followed in rationing should be to discover as accurately as possible what the animal is capable of producing, and to feed the required quantity of food.

As regards milk, this principle is fairly easy to apply. A gallon of average milk, containing 3.75 per cent of butter fat, has an energy value of about 3000 Calories; a pound of starch equivalent has a value for milk production of about 1350 Calories. It follows that in theory a cow should have 2.22 lb. of starch equivalent for each gallon of milk that she gives. The recent Departmental Committee on the Feeding of Dairy Cows has recommended that in practice this allowance should be raised to 2½ lb., and this figure is that on which most rationing schemes are now based. There is abundant experience to show that the figure is about right, allowing no more than the necessary margin of safety. It should be noted, of course, that the energy requirement varies with the composition of the milk, the necessary variations in the energy supply per gallon for milks of varying composition being as follows:—

Butter-fat content per cent.	Starch equivalent per gallon.
3.00	2.12
3.25	2.25
3.50	2.38
3.75	2.50
4.00	2.62
4.25	2.75
4.50	2.88
4.75	3.00
5.00	3.12
5.25	3.25

After milk production the simplest rationing problem is that presented by the full-grown fattening animal. It has

already been pointed out that one definition of the term starch equivalent is that a pound of starch equivalent is a quantity of food containing enough net energy to enable a fattening steer to produce a quarter of a pound of fat. However, the live-weight increase of an ordinary fattening bullock is not all fat—it includes a proportion of flesh, which has a much lower energy value, and also some water and other matter. The proportion of fat in the live-weight increase is comparatively low at first, and gradually increases as the fattening process proceeds. The energy requirement, per pound of live-weight increase, can be calculated with some accuracy. In the case of a bullock starting in average store condition and making little growth, it is about $2\frac{1}{2}$ lb. starch equivalent in the early stages, reaches about $3\frac{1}{2}$ lb. in the stage between “good” and “prime,” and averages about 3 lb. for the whole period. This last figure is in fairly close agreement with the results of practical feeding experiments where a reasonably well-balanced ration has been used. There is reason to suppose that the same figures would apply to mature sheep, but most sheep are ordinarily fattened while still making a certain amount of growth. Professor Wood has recently shown that the energy requirement of ordinary winter fattening hogs is about $2\frac{1}{2}$ lb. starch equivalent per pound of live-weight increase.

As regards growth, without considerable fattening, the energy cost of a pound of live-weight increase is lowest in the very young animal, because the live-weight increase contains a considerable proportion of water and mineral substances, and very little fat. The energy cost rises steadily as the age increases. The pound of starch equivalent supplies about the same amount of net energy for growth as for milk production, —viz., 1350 Calories. On this basis, Armsby's net energy figures for cattle give the following starch equivalents :—

Age in months.	Pounds starch equivalent per pound live-weight increase.
0-1	0.9
1-2	1.0
2-3	1.1
3-6	1.3
6-9	1.5
9-12	1.8
12-18	2.2
18-24	2.3
24-30	2.5

In the case of pigs, growth and fattening generally proceed simultaneously ; for these Professor Wood's figures, converted to starch equivalents, are as follows :—

Live-weight of pig.	Pounds starch equivalent per pound live-weight increase.
50	0.4
100	0.6
150	0.9
200	1.1
250	1.3
300	1.6
350	2.0

The very marked economy in the young animal in producing live-weight increase is obvious, but its relatively higher maintenance requirement must be taken into account.

The rationing of work animals is a much less exact business, because there is no satisfactory method of measuring the output. It is true that one can, by placing a dynamometer between horse and implement, measure the work done ; and since the net efficiency of the horse has been reckoned at about 33 per cent, the amount of net energy to be supplied, in addition to the maintenance requirement, will be about three times the amount recovered. But the energy required to perform a particular operation varies greatly according to the nature and condition of the land, and the net efficiency of the horse varies with his condition. In practice, then, it is impossible to apply anything but the roughest of approximations. Armsby suggests a figure of about 1750 Calories of net energy per hour of full work, which is equivalent to 1.2 lb. starch equivalent, or, say, 2 lb. of oats. This is for a horse of 1000 lb. live-weight. The average farm horse of 1500 lb. would thus require 1.8 lb. starch equivalent, or 3 lb. of oats for each hour of full work. With an average of thirty-six working hours per week, the normal production ration for such a horse would be 16 lb. oats per day. On full-time hard work, say 50 hours per week, the standard would imply a daily ration of 21 lb. of oats per day. Professor Wood's standards for a horse of 1450 lb. are 8½ lb. of oats on light work, 13½ lb. on medium, and 18 lb. on heavy. These standards are in fair agreement, and represent fairly nearly the amounts actually fed on the average farm.

PROTEIN VALUES OF FEEDING-STUFFS.

Proteins or albuminoids are required in considerable quantities both for maintenance and production. Also, as a rule, they are fairly expensive, either to produce on the farm or to buy. Hence it is a matter of some importance that we should be able to estimate the value, as sources of protein, of the ordinary feeding-stuffs. To some extent this is accomplished by the ordinary chemical analysis, in which the actual estimation made is of nitrogen. The figure so obtained is multiplied by $6\frac{1}{4}$, and the product is stated as albuminoids. The assumption is that all the nitrogen is present in albuminoid form, and that albuminoids contain, on the average, 16 per cent of nitrogen. However, in certain cases a proportion of the nitrogen is derived from substances other than true proteins, and some of these may have little or no protein value to the animal. Moreover, the different proteins are not by any means of equal value.

Nitrogen is absorbed by plants in the form of nitrates, and is present in this form in young tissues—for example, in immature mangels. This nitrogen is converted in turn into ammonium compounds and into another group of relatively simple organic substances that are commonly called amides; finally, these amides are combined together into the very complex true proteins. There are many different proteins, built up from varying proportions of the different amides. When protein is digested by the animal, it is broken down into its constituent amides, and these are reassembled in new proportions to form the particular sort of protein that the animal needs. Let us, for the purposes of illustration, call the various amides *a*, *b*, *c*, and *d*, and let us suppose that the average protein required by the animal is made up by combining these in the proportions $1a + 2b + 3c + 4d$. It will be obvious that a single amide, fed by itself, will be quite useless to the animal as a source of protein. This has been amply confirmed by experiment. Further, a protein composed of *a*, *b*, and *d*, but containing no *c*, would likewise be useless if fed alone. Gelatin and zein, one of the proteins of maize, belong to this class of imperfect proteins. Again, a plant protein of the constitution $1a + 2b + 3c + 2d$, when fed by itself, would have only half maximum efficiency, because it contains only half the proportion of *d* that the animal requires; but if such a protein were fed in conjunction with another having the constitution $1a + 2b + 3c + 6d$, maximum efficiency would be secured. The actual case is more complicated than this, but the essential point is that protein cannot be regarded as a single substance of uniform value. Investigation of the proteins has not gone far enough

to enable us to select the particular combination that will supply, without waste, the requirements of the animal. All that can be done is to supply a mixture of proteins from a variety of sources, in the hope that deficiencies in one direction will be balanced by surpluses in another; and to reckon the animal's requirements with such a margin of safety as actual trials show to be necessary. Incidentally, it may be noted that animal proteins such as those of fish meal or meat meal are better balanced, and therefore more efficient, than plant proteins.

Since the animal, in digesting a protein, breaks it down into its constituent amides and afterwards reassembles these, there is no reason to suppose that a mixture of separate amides would be less valuable than the same amides combined in protein form. However, some plant amides are not in a form that the animal can use, and it would certainly be unsafe to attribute full protein value to the amides as a whole. Kellner and Armsby both based their feeding standards on digestible true protein—that is to say, they allotted no protein value to the amides. But this method of reckoning leads in certain cases to absurd results—for example, it implies that a full ration of turnips and oat straw contains little more than half the quantity of protein required for maintenance. The recent Departmental Committee on the Rationing of Dairy Cows adopted the plan of allowing half value for the amides—that is, of adding together the percentage of digestible true protein and half the percentage of amides, calling the figure so obtained the *protein equivalent* of the feeding-stuff. In the case of grain, oil cakes, &c., the protein equivalent is very little different from the digestible true protein figure, because the amount of amides present in such feeding-stuffs is negligible. On the other hand, Swedes contain about .3 per cent of digestible true protein along with .8 per cent of digestible amides. The protein equivalent is thus .7 per cent. While it is obvious that the protein equivalent is but a rough measure of the protein value, it is probably, in the present state of knowledge, as good as any other that could be devised.

PROTEIN REQUIREMENTS—MAINTENANCE.

When an animal is fasted, it not only uses up its reserves of energy (fat), but it excretes in the urine a certain amount of nitrogen derived from the breaking down of body proteins. It is fairly easy to discover, by a process of trial and error, the quantity of protein that must be fed to balance this loss, and numerous experiments have been carried out on such lines. On the whole, the results are in fair agreement, especially if it be considered that widely different protein mixtures

were used in different cases. The figures indicate that, as might be expected, the wastage of protein is directly proportional to the body weight. For cattle a large number of trials give an average maintenance requirement of .54 lb. protein equivalent per 1000 lb. live-weight per day, the highest result being .66 lb. and the lowest .41 lb. The standard figure used in this country is .6 lb., which is certainly enough if a reasonably balanced mixture of proteins is used. For the horse and pig the experimental evidence is comparatively scanty, but so far as it goes it indicates that the maintenance requirement is about the same as, or probably slightly lower than, that of cattle. In the case of sheep the bare maintenance requirement is again about the same, but a small additional supply is necessary to support the growth of the wool. Professor Wood's figure is .07 lb. for a standard sheep of 100 lb. live-weight; Armsby's allowance of .055 lb. of true protein would, with an ordinary mixed diet, mean much the same thing.

PROTEIN REQUIREMENTS—PRODUCTION.

The easiest problem in connection with the requirements of protein for production is presented by milk. The average amount of protein present in milk is about 3.5 per cent, and the amount rarely exceeds 4 per cent or .4 lb. per gallon. Obviously this represents the absolute minimum of digestible protein that must be fed if the cow is to maintain her condition, and the only question that arises is the magnitude of the margin of safety necessary in practice. The efficiency of the cow as a converter of food protein into milk protein is undoubtedly high. It has been found by actual trial that, allowing for the maintenance requirement, the proportion of digestible protein in the food that can be converted into milk protein may vary between 75 and nearly 100 per cent. On the other hand, the feeding of a certain excess of protein above the theoretical requirements seems to stimulate the production of milk. Various authorities, basing their recommendations on various grounds, have suggested the following allowances per gallon of average milk ("crude" includes amides, "true" excludes these, while "protein equivalent" includes them at half value):—

Haecker (U.S.A.)		.52 lb. crude.
Eckles		.54 lb. true.
Armsby		.50 lb. true.
Kellner		.60 lb. true.
Hansson		.47 lb. true.
British Departmental Committee		.60 lb. protein equivalent.

The last figure, which is that generally used in this country, allows a margin of safety of fully 50 per cent. The same margin applied to the Channel Islands breeds, which yield abnormally rich milk, gives a figure of .74 lb. per gallon.

In theory the same kind of calculation could be made for milking ewes and sows, but there are not sufficient data regarding either the yield or the composition of the milk of these species. Roughly speaking, a ewe giving half a gallon of milk per day would require, in addition to maintenance, about 1.9 lb. starch equivalent containing .55 lb. protein equivalent, while a sow yielding one gallon would require 2 lb. starch equivalent containing 1 lb. protein equivalent. The relatively quicker growth rate of the pigling and the lamb as compared with the calf necessitates a higher protein content in the milk, and this in turn necessitates the feeding of relatively more protein to the milking dam. Of course, with sows and ewes the necessity to maintain the bodily condition is much less than with cows, because the lactation period is so much shorter. At the same time, it seems likely that failure to give enough milk (for example, with ewes before spring grass is available) may often be due to an inadequate supply of protein in the food.

The protein content of the live-weight increase of growing and fattening animals can be estimated with sufficient accuracy for our purposes. It varies with the age of the animal, being, of course, highest in the young, and gradually diminishing with age. In young calves and lambs it may be reckoned that 25 per cent of the live-weight increase is protein; in half-grown cattle and sheep about 20 per cent, and in the final stages of growth about 15 per cent. The last figure applies equally to the early stages of fattening in the grown animal, while in the middle and final stages the proportion falls to 10 and 5 per cent respectively. In the case of pigs the protein content of the live-weight increase is lower, varying from 16 per cent in the weanling to 10 per cent at a year old. With the younger animals, it seems that if we allow a margin of safety of the same order as that mentioned for milk production, these figures represent something like the actual requirements of protein equivalent for growth. However, when we come to the later stages of growth and to fattening quite other considerations apply. For one thing, when a heavy ration is fed, it is found that the wastage of body protein increases, probably because of the increased activities thrown upon the digestive glands. Moreover, if the protein content of the ration is reduced below a certain level, it is found that the digestibility of the carbohydrate portion of the ration falls. Experiments to determine the practical minimum of protein for full growth or fattening

have given rather contradictory results, and nothing like definite recommendations can be made for all cases. Throughout the history of feeding standards there has been a progressive tendency to reduce the protein figures: thus Wolff's standard for a fattening bullock included $2\frac{1}{2}$ lb. of digestible protein; Kellner laid down 1.6 lb. of digestible true protein; and Wood suggests 1.5 lb. of protein equivalent per 1000 lb. live-weight. It is possible that a further reduction might be made without loss of efficiency, but in the present state of knowledge it would seem to be unwise to recommend any ration for growing or fattening ruminants that contains less than one pound of protein to eight pounds of starch equivalent. For pigs it is a useful practical rule that the ratio between protein equivalent and starch equivalent should be 1:5 for weanlings, 1:6 for shoates, 1:7 for larger growing pigs, and 1:8 in the final stages of fattening for bacon.

The performance of work leads, as has often been shown, to little or no direct increase in the protein expenditure; the energy required can be obtained entirely from carbohydrates and fats. However, the same considerations apply as in the case of fattening—namely, that a very low protein supply may lead to undesirable secondary effects. In this case, it would seem that satisfactory results can still be obtained on a ratio of 1 of protein equivalent to 9 of starch equivalent.

THE BULK OF THE RATION.

The most satisfactory measure of the bulk of a ration is its total dry matter content. The normal consumption of dry matter, in the case of cattle in ordinary store or breeding condition, may be put at $2\frac{1}{2}$ per cent of the live-weight. On the one hand, a maintenance or low production diet may be reduced as low as $1\frac{1}{2}$ per cent without ill results. At the other extreme, the maximum figures quoted by some authors for deep-milking cows run as high as $3\frac{1}{2}$ per cent; it is doubtful, however, if any large proportion of animals can consume as much, unless the ration is reckoned on a live-weight ascertained when the animal is in very lean condition. Boufflour has found, with dairy cows, a definite advantage in restricting the bulk to 3 lb. of dry matter per hundredweight, the live-weight being ascertained when the cow is in normal fresh condition. This is equivalent to nearly $2\frac{1}{2}$ per cent of the live-weight. As regards fattening cattle, the total consumption tends to decline somewhat during the fattening process, while the live-weight is increasing. Reckoned on the actual live-weight, the dry matter consumption may approach 3 per

cent at the beginning, and fall to little more than 2 per cent at the end. Obviously no system can take account of differences between the appetites of individual animals, which differences may be rather considerable.

For sheep most authors give figures of the same order as those for cattle. The old Wolff-Lehmann standards range from 2 to 3 per cent; Kellner's from 1.8 to 3.2, with 2.8 to 3.1 per cent as full rations for fattening lambs and hogs; Armsby indicates roughly the same figures as for cattle—2 to 3 per cent, with a normal of 2.5. Professor Wood has recently published a curve of normal dry matter consumption for fattening sheep, which gives 4.1 per cent for small (60 lb.) hogs, 3.4 per cent for medium (100 lb.), and 3.1 for heavy (140 lb.). The grounds for this much larger estimate are not entirely clear, and Professor Wood himself remarks that the recorded consumption in most British experiments was less. Clearly this is another point in sheep feeding that requires further investigation.

For farm horses 2 per cent of the live-weight may be regarded as normal, $2\frac{1}{2}$ as a maximum, and $1\frac{1}{2}$ as a minimum. Smaller animals eat proportionately a little more.

CONCLUSIONS.

1. There are, at the best, possibilities of considerable errors in all calculations of rations. Feeding standards should, therefore, be regarded only as general guides in feeding, to be modified in the light of actual experience.

2. The most successful application of feeding standards has been found in the rationing of dairy cows. The principles involved are those of providing for maintenance at the rate of 6 lb. starch equivalent and .6 lb. protein equivalent per thousand pounds of live-weight; of providing for milk production at the rate of 2.5 lb. starch equivalent and .6 lb. of protein equivalent per gallon; and of restricting daily consumption of dry matter to $2\frac{1}{2}$ per cent of the live-weight. As a rule this scheme works well in practice, and its introduction has often led to material economies in feeding.

3. With regard to growing and fattening cattle, there is enough information available to enable us to feed approximately the amounts of food necessary to ensure any desired rate of progress that is within the capacity of the animal.

4. In the case of sheep, some of the fundamental data, such as the maintenance energy requirement and the consumptive capacity, are still in doubt. Further experimental work of

an exact kind is necessary before helpful feeding standards can be laid down.

5. The rationing of pigs is, comparatively speaking, an exact science.

6. With work horses there is no practicable method of accurately measuring the output, nor is there adequate information on the question of the net energy values of the common foods. Feeding standards for horses are, therefore, nothing more than attempts to summarise and express in systematic form the experience of practical men.

THE UTILISATION AND CONVERSION OF TIMBER, FROM THE POINT OF VIEW OF THE SMALL LANDOWNER.

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MUCH might be written under this title, which covers a large field. If treated exhaustively a good deal of technical detail would be required. It is not proposed, however, to do more than outline the subject. Those who have the time and inclination can follow it up by reference to the literature and by learning from the practice and experience of others.

Conversion begins with the felling and measurement of the timber, followed by haulage and transport to the point of manufacture where, in turn, the round timber is converted into the multifarious articles for which wood is used.

While the object of this article is to deal more particularly with the conversion of timber on a comparatively small scale, the subject can hardly be dissociated from problems and difficulties which equally confront the owner of large woodlands.

SPECIES.

Even a small area of woodland, such as 100 or 200 acres, usually shows a great variety of species. This is not an unmixed advantage for the owner when dealing with the question of utilisation. A distinction can be made, in the first place, between the broad-leaved species and conifers. The broad-leaved species, mainly hardwoods, which are commonest in Scotland are oak, ash, elm, beech, sycamore, birch, alder, and poplar. Other species, such as lime, sweet chestnut, horse chestnut, occur in quite considerable quantities on some estates.

It would be almost an impossible task to ascertain the proportion each of these species represents in the total stock of hardwood, and appearances are deceptive. Oak, beech, and birch are the species which are most noticeable as a rule. Hazzarding a guess, the following may represent the approximate percentages—

	Per cent.
Oak	20
Ash	5
Beech	20
Elm	15
Sycamore	10
Birch	20
Alder	5
Poplar, lime, sweet chestnut, horse chestnut .	5
	100

Hardwoods present a much more difficult problem in utilisation than the coniferous species.

Taking Scotland as a whole, it is probable that spruce and Scots pine are about equal in quantity, the former species predominating in western districts and the latter species in the east. If each represents 45 per cent, the remaining 10 per cent will cover larch, Douglas fir, and other species.

These estimates relate to mature timber and not to young or even middle-aged crops.

MEASUREMENT.

The need for measurement of timber on small estates is generally overlooked or minimised, more especially if the timber is used at home and is not sold. Even when it is sold it is often a case of "£25 for the lot," with very little idea of how the price will work out per cubic foot. This is not good business, nor is it efficient management. Agricultural producers do not sell grain or hay in such a casual manner. As there is a good deal of ignorance about the measurement of timber, it may not be out of place to give some information on the subject.

Timber in this country is not measured according to its actual solid contents as on the Continent, but by the quarter-girth method. One-fourth of the average girth or circumference is squared and multiplied by the length of the tree or log. The result obtained is that every 100 cubic feet true measurement is reckoned at roughly 75 feet quarter-girth measurement. The calculation of the contents of a large number of separate logs or trees would be a somewhat laborious proceeding, but this is rendered unnecessary by the use of measurement tables. "Hoppus's Tables" are the best known, and in all but universal use. Other special tables have been prepared for the calculation of railway rates. If every tree was uniform in shape, and represented a tapering cylinder, measurement would be comparatively easy. As a matter of fact, scarcely any two logs are the same. Most stems are not

truly cylindrical. A log measuring 12 in. diameter on one side and 10 in. diameter on the other side has a smaller sectional area than a perfectly cylindrical stem measuring 11 in. in both directions. The taper of stems will vary considerably even in a fairly uniform and well-grown crop. In hardwoods the inequalities of stems are much more marked, and a different method of measuring is adopted. It is quite possible for skilled measurers to bring out different results in the measurement of oak timber in particular. The custom with hardwoods is to measure the tree in sections to points where large limbs have come off, taking the middle quarter-girth of each section. There may in this way be half-a-dozen separate measurements for a single tree. With coniferous timber, the usual practice is to measure the whole tree in one length and take the middle or mean quarter-girth. It is of some consequence in the measurement at what point the tree is topped or "measured out" to. When timber is being sold by measurement this is a matter of arrangement with the purchaser. Hardwoods may be topped at about 6 in. diameter or less. 3 in. to 6 in. diameter, according to the class of timber, are customary figures for conifers. The firewood may be thrown in or estimated separately by the load or ton.

Bark allowance is a question which sometimes gives rise to difficulty. The true percentage allowance for bark varies considerably, not only as between different species, but as between trees of the same species of different ages or growing under different conditions of soil or exposure to light. Oak and elm are examples of trees having a fairly high percentage of bark; beech and sycamore having thinner and smoother bark show a much lower percentage. Bark allowances may range from $7\frac{1}{2}$ to 15 per cent, but 10 per cent is often taken to cover all species. For estate purposes it is much better to ignore bark allowance altogether, and even for sale there is perhaps an increasing tendency not to deduct bark allowance, but to allow for it in the price per cubic foot. This is, on the whole, the better method.

Quarter-girth tapes can be readily purchased, and also notebooks specially ruled for entering the particulars of quarter-girth and length of each log. A column is also provided for the cubic contents after the figure has been ascertained by reference to "Hoppus."

These remarks apply to the measurement of felled timber where the whole stem is accessible to the tape. The measurement of standing timber is a more difficult matter, requiring a considerable amount of skill and experience. Information on this branch of timber measuring can be obtained from the text-books, and need not be further referred to here.

A record of all the timber annually felled on an estate, distinguishing between the different species and showing the

method of utilisation or disposal, is of considerable value, more especially as time goes on and the particulars for a series of years become available. Such a record is well worth the trouble involved, and takes much less time to keep than might be imagined.

Where part of the timber is utilised and converted on the estate, measurement is important for the reason that the owner is otherwise unable to make accurate costings should he desire to do so. Only in this way is it possible to ascertain whether conversion of timber on an estate is profitable, or whether it may not be better to sell all timber by periodical or annual fellings, and to purchase the manufactured timber for estate requirements in connection with buildings and fences.

FELLING.

Felling timber is an operation which lends itself to payment by piecework, and where this can be arranged it is undoubtedly the most economical method. Rates paid for felling vary considerably according to the size and description of the trees. Rough coarse stems growing on difficult ground naturally take more labour than a clean uniform crop growing on the level. Generally speaking, the rates paid for hardwoods may vary from 6s. to 9s., and for softwoods 4s. to 6s. per 100 cubic feet. These rates cover the dressing or snedding and topping of the stems, as well as the actual felling, but do not include cross-cutting.

There are general rules for felling which are well known to timber fellers, but which it is often as well to lay down in writing if piecework is arranged. Such rules include the felling of trees uphill or sideways on steep slopes if so required; felling downhill on a steep slope may result in a good many broken or split stems; felling across large stones or rocks or hollows in the ground may result in the breaking of stems, which would be easily avoidable by choosing another direction for the fall. A little consideration in the direction of felling will often facilitate the subsequent removal of the tree when it has to be dragged by horses. If trees are being taken down adjacent to timber which is to remain standing, the felled trees should, if at all possible, be directed in their fall away from the standing timber. Should a large tree require to be taken down in a standing crop of younger age which is to remain, the best line for felling so as to do the least possible damage should be carefully studied. It is perhaps hardly necessary to mention that felling timber in a high wind is dangerous and should be avoided whenever possible. These rules may seem self-evident, but it will be found that they

are often overlooked or ignored. The desirability of winter felling whenever possible is not sufficiently realised. Coniferous woods can be felled in summer without much harm being done, but certain hardwoods, especially ash, beech, and sycamore, spoil quickly by felling when full of sap.

DRAGGING AND HAULING.

When timber has been sold to a merchant either standing or felled, the question of transport does not concern the owner. If, however, the timber is required for estate purposes, or is being sold delivered at the purchaser's mill or put on rail, expeditious and economical handling of logs becomes an important question. Timber is a bulky, awkward commodity to handle, and its value per ton lying in the wood is relatively low. It is therefore of the utmost importance to keep down the haulage costs to the lowest possible point. It is sometimes possible to dispense with horses in dragging logs either to a tramway or a hard road, a traction engine, tractor, or similar power being used instead. This cannot, however, usually be arranged on a small estate unless the work is done by a contractor. As a rule, horses must be relied upon for the preliminary dragging to the loading point. Dragging, especially on steep or soft ground, is trying to horses, and should be reduced to a minimum. Even in a comparatively small way, where the nature of the ground permits, a tramway can be used with advantage. A description of a forest tramway made entirely with small timber will be found in a recent number of the 'Quarterly Journal of Forestry.' Steel rails can, of course, be used equally well, but involve more capital outlay.

It is not possible to give exact costs for dragging; so much depends on the distance to the loading point and the nature of the ground. Dragging is not likely to cost less than a half-penny per cubic foot, and may easily amount to three times that sum. It is undesirable to attempt dragging, unless on very easy ground, with men and horses not accustomed to the work. There is considerable risk to the horses, and the amount of work accomplished will be disappointingly small. Loading on to horse waggons for haulage on roads is usually performed by the use of the tripod shear-legs, or by skids. Where skidding or rolling can be adopted it is naturally much quicker.

Road haulage by mechanical means is now becoming much more general. The steam waggon or tractor, with or without a trailer, is no doubt the most economical form of road haulage, followed by the motor lorry capable of a load of from two to four tons. Not many small estates can find full employment for such expensive haulage plant, but it is not now so difficult to contract for haulage at a reasonable rate. The cost per

mile decreases considerably for a long haul as compared with a short one, for the reason that a considerable part of the time is absorbed in loading and unloading. For an average haul of say three miles the cost per cubic foot of timber should not exceed '3d. per mile, and over three miles the cost per mile would come down to '25d. or even less. Horse haulage is more costly even for short distances, and from '50d. to '75d. per mile may be taken as average rates. There is considerable scope for economy in haulage costs by improved methods of handling and organisation. One difficulty which will be experienced in dealing with timber transport is that the haulage must nearly always be one way only, and that return loads are not available. A great deal of timber haulage has necessarily to be done over roads with a bad surface. This not only adds greatly to the consumption of petrol or coal, in the case of mechanical transport, but also increases the expenditure upon repairs and renewals.

SAWMILLS.

Estate sawmills are to be found of infinite variety—water-power, steam, and oil,—varying from a few horse-power up to 50 h.p. Perhaps water is still the commonest power in country mills, although in many cases where cauldts are carried away or seriously damaged they are not repaired owing to the high cost. Where good water-power exists there is nothing more suitable for a sawmill. A large water-wheel by its momentum has a reserve of power for taking sudden loads which is absent in an oil-engine. The efficiency of a breast or undershot wheel is low as compared with an overshot wheel. The latter type can only be used where there is a considerable fall equal to the full diameter of the wheel. A good type of turbine is more efficient than any type of water-wheel. Machinery in estate mills driven by water-power is often very cumbersome and clumsy, and as much as one-half of the power developed by the wheel may be lost in transmission before it reaches the saw. This is a matter which can sometimes be remedied without a great deal of difficulty.

Steam is, next to an assured water-power, the most satisfactory for a sawmill, giving a steady drive. The fuel used may be coal or waste wood. If coal is used the running costs are naturally increased considerably.

Oil engines have come increasingly into use for sawmills in recent years, and the running costs compare favourably with steam where coal has to be purchased. Oil engines are, however, less suitable for taking sudden and variable loads, and consequently it is essential, in order to avoid trouble, to have an ample reserve of power and to instal an engine capable of a maximum load considerably above the normal.

In recent years engines running on crude oil have been greatly improved, and are now fairly reliable. It is claimed that this type of engine will run on a fuel consumption of about half-a-pint of oil per horse-power per hour. The cost of oil in bulk is no more than about £6 to £8 per ton.

A very cheap form of power is a gas engine run on producer gas from waste wood and sawdust. This type of engine is unsuitable for most estate mills, however, for the reason that it is unfitted for intermittent running and only gives good results when the mill runs full time every day.

Electricity as a sawmill power will without doubt increase in the future, but, so far as country estate mills are concerned, only a few are equipped with electric power at present. If electricity for power purposes becomes really cheap in country districts, as it is in many of the large towns, there would no doubt be a big increase of its use in sawmills. The convenience of shutting off the motors quickly is considerable.

Most estate sawmills are permanent or fixed, all timber on the estate being brought into the mill yard for conversion. In some cases a portable mill is used, and it has advantages. Taking everything into account, however, the fixed central sawmill is most suited to the average estate requirements.

It is unnecessary to go into details about saw benches. There are many efficient makers whose catalogues or advice are available. The size of saw which is used depends largely on the power available. Circular saws are in almost universal use in estate mills. The efficiency and accuracy of band saws and frame saws are well known, but machinery of this type not only requires considerable power, but also specialised care and attention.

The lay-out of a sawmill is of much greater importance than is usually realised. Timber in the log is heavy and awkward to handle, and manual labour should be replaced by mechanical power in every possible way. It is quite common to find mills where the logs have to be taken into the sawmill and the manufactured timber brought out the same way. It is also not uncommon to find that the timber brought in by waggon or motor is laid down at some distance from the bench, and has, before conversion, to be lifted from the ground and transported by hand. Cross-cutting logs by hand is also still the general practice. If the working costs for labour per cubic foot of timber handled were carefully worked out for a year, the result might be somewhat surprising. It is equally instructive to calculate the number of cubic feet handled per hour or per day. Figures of this kind will often show clearly which branch of the conversion expenditure is unprofitable, as such work may often be. An estate sawmill, especially in an isolated or outlying district, may be useful and convenient. Even so, every estate owner who has a mill is advised to analyse the

costs of conversion of his timber in terms of cubic feet. The result may well be that it is more economical to buy fencing material, or to hire a travelling mill once a year at contract rates.

Sawmilling, and the conversion of home timber, is an industry requiring a considerable amount of knowledge and experience, especially if the best possible use is to be made of the wood, and waste avoided. On the other hand, where estate sawing is mainly confined to fencing stakes and rails, gate-posts, and the ordinary types of building timber such as sarking boards, rafters, ties, wall plate, floor joists, or even flooring and window wood, an efficient well-run estate mill is a great asset, and affords a means of dealing with much timber which would otherwise be saleable at a very low price, if indeed it could be sold at all.

Previous reference has been made to the species of timber usually available from Scottish plantations, and it may be useful to refer in more detail to these, describing the various uses to which these timbers can be put.

Oak timber has probably more uses than any other. Its valuable qualities are well known. In England cleft oak is employed for a considerable number of purposes. Oak pale fencing is extensively used and makes an efficient and durable close fence, preferable in every way to iron sheets or close boarding. The pales can be made any length, but are usually about $3\frac{1}{2}$ in. to 4 in. wide and $\frac{1}{2}$ in. tapering to $\frac{1}{4}$ in. thick. Allowing for overlap about 12 pales go to the yard. It is no doubt true that oak grown in Scotland does not split so well as prime oak from the Midlands or the South of England, but even if there is rather more waste it is a matter for consideration whether this excellent form of fencing for gardens or yards might not be more widely used. The most general use of oak for estate work is in gate-posts or straining posts, for which it is admirably adapted. Posts may be of varying dimensions according to the particular purposes for which they are required. Hanging posts for field gates should usually contain about three cubic feet of wood, and if sawn square, it is a good plan to leave unsawn the portion which is below ground. A considerable bend is no disadvantage in the part of the post which is buried. For turn-posts in wire fences lighter material is quite adequate containing $1\frac{1}{2}$ to 2 cubic feet. Oak can also be usefully used for farm buildings as posts for sheds, lintels, or window wood. Oak fencing-posts are now rather extensively used, and even if containing a certain amount of sapwood they make a strong and lasting fence. In England oak rails are also used cut to the usual scantling of $3\frac{1}{2}$ in. by 1 in. The ordinary lengths are 10 feet or 12 feet according to the spacing of the posts at 5 feet or 6 feet. Sawn oak rails might be used to a greater extent than at present in Scotland. Oak gates, al-

though rather heavy for ordinary field purposes, are suitable for riding gates or for gardens, &c. Other uses for oak are in connection with implement-making or cartwright work, but material of this description usually requires to be accurately sawn and seasoned. The manufacture of oak timber for these purposes is therefore better left to the timber merchant. Oak crooks are still in considerable demand for boat-building. The selection of the bends or crooks and the points where the branches should be cross-cut requires considerable judgment.

It may be thought that oak is too good a timber to use for some of the purposes enumerated. This is not so, however, as fencing material, and even gate wood, can be sawn out of moderate-sized trees, or even large limbs. Oak timber of less than 12 in. quarter-girth is not a very marketable commodity at the present time, and it is far better utilised at home than offered for sale if the price is below 10d. per cubic foot. Oak of 12 in. quarter-girth and over, especially if it is clean and straight, has considerable value, and is much better sold in the log to a merchant than converted at home. Good quality oak of some size is unfortunately scarce. It is in demand for railway wagon building, planking, and a great variety of purposes.

Ash.—For actual variety of use ash probably equals oak, although in quantity it falls far behind. Ash timber is peculiar in several respects. The more quickly it is grown the better the quality and the greater the strength. Wide annual rings imply a larger proportion of dense summer wood than narrow annual rings. This is strikingly illustrated in a recent bulletin issued by The Forest Products Research Laboratory on the air seasoning and conditioning of timber. For all bending purposes ash is unrivalled, showing extraordinary pliability and toughness. There is unfortunately not a great deal of ash timber in Scotland, and much of the standing ash is old, coarse, short in the fibre, and comparatively worthless. The species is one that is somewhat capricious with regard to soil. It is difficult to judge what soils or situations will be really suitable unless experience can be gained from ash already growing on the land. Much of the ash growing in Scotland is spoilt by "Black Knot," a canker fungus which is most in evidence where the soil conditions are not ideal.

It is very important to fell ash in winter in order to obtain the white or whitish-pink colour that is an indication of quality. Ash felled with sap in the wood becomes dark in the colour, and after planking is much more liable to split.

One of the principal uses for ash in the past has been for shafts. For this purpose it is unrivalled, especially if a log has a natural bend for the shape of shafts. The timber is largely used for wheelwright work, motor bodies, tool handles,

and furniture. A more recent use, requiring a large amount of the best timber, is that for tennis rackets.

Prime ash should always be sold in log for conversion by merchants. It is wasted by being used for estate or farm work, except to a limited extent in cart work and tools. On the other hand, the large amount of inferior old ash growing in many woods has little market value and is much better used at home. Rough ash makes capital firewood.

Elm.—There are two species of elm—the English elm or red elm (*Ulmus campestris*) and the Wych elm, Scotch elm or white elm (*U. montana*). The two species are to a great extent confined to the countries which give the popular names. The English elm is as uncommon in Scotland as the Scotch elm is in England. It is hardly necessary, therefore, to refer in any detail to the English elm. It is a tree attaining very large dimensions in the Midlands and South of England, specimens of large girth being frequently recorded. English elm has a bad reputation for breaking or falling without much warning, and many accidents have occurred along roads from this cause. It is also rather liable to windfall. The timber, like ash, is of most value when it is fairly young. Old trees frequently show extensive decay of the stem after felling. The timber does not split easily when nailed, and has in consequence a value in box-making. Another somewhat important use is in chair seats and furniture-making.

The Scotch elm is, on the whole, a more valuable tree. It is a stronger and tougher wood, and is sometimes used for the same purposes as ash, when cheapness is considered or ash is not obtainable. It is a much more stubborn wood to work than ash. Elm is extensively used for wheel naves and otherwise for cartwright and turnery-work. Even good quality Scotch elm never commands a high price, and the usual type of tree which is coarse and branchy is almost unsaleable. For this reason it is often retained for estate use. It is a great mistake to use elm for gate-posts or straining posts unless creosoted or well tarred. Untreated elm, especially if cut with sap in the wood, decays very quickly at the ground line, and much trouble and annoyance may be caused in a comparatively new fence by finding that the elm straining posts have all given way within a comparatively short time of erection, and when all the other timber in the fence is still perfectly sound. Elm can, however, be usefully creosoted provided it is not over-dry or allowed to absorb too much creosote. The timber can also be employed in places where it is continuously wet or under water. In situations where it is alternately wet and dry it decays rapidly. Another use for elm timber is for pit chocks, for which there is a considerable demand in the pits in the North of England. The price is not large, but the sawing is easily done, and the value of the timber in the log is

low in any case. A certain amount of elm can also be used for the rougher colliery work such as hutch boarding, &c.

Beech.—Beech timber is probably commoner than elm in Scotland, and is unfortunately more often than not of poor rough quality and far from saleable. Merchants do not as a rule care to purchase any large quantity of beech, even if forming an admixture with other timber. The industrial uses for beech include furniture-making, millwright work, rollers, and brush backs. For some of these purposes clean timber of considerable dimensions is essential. The size is more often obtainable than the cleanness and quality.

For estate purposes beech is not of much use except for creosoting and converting into fencing material. Where beech is unsaleable, or nearly so, the best course is to convert it into fencing stakes treated with some preservative. Beech makes excellent firewood, and may be used for that purpose when unfit for anything else.

Owing to its low value beech is often badly mishandled in felling and manufacture. The timber suffers considerably if felled with sap in the wood, quickly losing its white colour and becoming stained and streaky; nor should logs be left exposed to the weather after felling, but conversion should proceed as quickly as possible. Neglect of these precautions is often responsible for giving beech timber a bad name as regards its keeping qualities.

Clean well-grown beech has at present, and is likely to retain, a fair value. Beech usually attains best quality if grown in conjunction with oak, although pure stands of beech of the highest quality can be seen both in the South of England and in Continental forests.

Sycamore.—None of the hardwood timbers vary more in price than sycamore. In small sizes it is not particularly valuable, but in the larger sizes, if suitable for rollers, high prices are paid, such timber being now very scarce. Sycamore is not, therefore, a timber to retain for estate use unless in such sizes as cannot be disposed of to a merchant.

As with other hardwoods, winter felling is very important so as to secure absolute whiteness in the wood. Some old trees lose their whiteness and show a yellow colour even when freshly felled. This may not materially reduce the value for rollers, but it does do so for other purposes. Other uses for sycamore of smaller sizes are in bobbin-making, brush backs, dairy utensils, &c.

Birch and Alder.—Birch is a species widely distributed in Scotland, especially in the Highlands, and it has only a very low value. In some districts the problem is to clear ground covered with birch without incurring an actual loss. This may seem surprising when imported birch boards and planks command a high price, but this American birch is cut from

fairly large trees. [It is] not often that Scottish birch can be obtained of sufficient size and straightness to cut into boards.

The wood is of no value for estate purposes in an untreated state, but if creosoted or treated with any preservative it makes fair fencing. There is in some districts where clogs are still worn a demand for birch for this purpose, as also to a limited extent for coopers' work, bobbins, and chair-making. At one time birch was in demand for charcoal manufacture, but this is an industry which has now disappeared. Birch twigs for the steelworks have also ceased to be used to any extent, and there is only a limited demand for brooms.

Alder is in request for some similar uses, such as clogs and bobbins. In contrast with the whiteness of birch wood, alder quickly becomes yellow and deep red on exposure to the air.

Poplar, Lime, Horse Chestnut.—These species of timber all have their special uses, and sometimes a fair local market can be secured. Where this is so, it is much better to sell the timber than to attempt conversion at home. Where, however, the timber is unsaleable or nearly so, these species are suitable for some estate purposes other than fencing. Poplar boards are useful for carts or barrow bottoms when stones are being handled. Poplar and lime can also be used for some interior work.

Scots Pine and Spruce.—These species of coniferous timber are perhaps the commonest in use for estate purposes. The timber is admirably suited for fencing or building material. It is lighter and more easily handled and converted than hardwoods. For these reasons coniferous timber is usually more saleable, and should it be found that the smaller hardwoods cannot be sold except at a nominal price, while the coniferous timber can be readily sold, it is better to retain the hardwoods for home use even if a little more trouble is involved. For that reason the use of hardwoods has been referred to at rather greater length.

The date of felling is not so material with coniferous trees, although winter felling is rather better than summer felling if the choice is possible. Both Scots pine and spruce vary enormously in quality in different parts of Scotland and at different elevations. The best quality of Scots pine timber in which there is a large proportion of red wood, is found on the east and north-east. Some very fine Scots pine is grown in the South-eastern counties, but, as a rule, the Scots pine growing South of the Forth and Clyde contains a high proportion of whitewood and cannot compare in quality with the timber of Aberdeenshire and the adjoining counties.

Great variations may also be seen in spruce, but such differences consist more in quick and slow growth than in any difference in colour.

Larch.—The quantity of larch timber remaining in Scotland is not large, and is probably decreasing. In many districts it is unusual to see stands of mature larch, and single trees or groups among other species are more common.

Larch timber always commands a ready sale, and although valuable for gate-making, or fencing work on an estate, it may often pay best to sell larch and use the less saleable timber at home. Larch timber is in considerable demand for boat-building and shipbuilding, and for various structural uses. It is by no means an easy timber to handle in the saw-mill. Besides being harder than the other conifers, it is extremely resinous and makes the saws sticky and inclined to pinch.

Larch thinnings, which may not find as ready a sale as the larger timber, can be well utilised at home by quartering for fencing stakes. Thus a 7 in. diameter pole if quartered will give four fencing stakes measuring $3\frac{1}{2}$ in. on the two sawn faces, and fully 4 in. on the third or curved face. A smaller size, say 5 in. to 6 in. diameter, can be sawn through the centre, giving two stakes of about the same sectional area. Such stakes, if they show a large proportion of whitewood, are none the worse for dipping in creosote.

In dealing with larch it may be as well in passing to refer to Japanese larch (*Larix leptolepis*) and the Hybrid larch (*L. eurolepis*). The Japanese larch has been extensively planted in Scotland during the past 25 or 30 years, and considerable areas are now of sufficient size to be utilised for estate purposes. It is rather soon to express a definite opinion as to the quality and usefulness of the timber, but so far as existing experience goes the wood is inferior to that of the European larch as regards strength and probably as regards durability also. The Japanese larch has, however, the merit of being practically immune from larch disease, which has in many parts of Scotland unfortunately made it impossible to continue growing the European larch on any scale. The extremely rapid growth of Japanese larch in the first twenty years may also account for its inferiority in strength, and with greater maturity it is quite possible that less difference in quality between the two species will be noticeable.

The Hybrid larch, which is a cross between the European and Japanese species, has not yet had time to reach timber size, although there are several plantations now in the pole stage and suitable for fencing purposes. There is no doubt as to the value of this species, and it is probable that the timber will be about equal in strength and durability to the European larch.

Silver fir.—There is a considerable prejudice against Silver fir in this country, although its merits are well known and appreciated on the Continent. Silver fir can be used for a

great many purposes for which spruce is usually employed, and is said to make excellent sarking boards for roofing. Probably one reason for the unpopularity of the wood is that it is somewhat difficult to drive nails into, especially once the wood has become dry and hard. Another drawback to Silver fir conversion in the estate sawmill is that the growing trees are often of immense size and girth, making them not only difficult to fell but still more difficult to transport and to saw. It is a common experience to find that the root-cuts, at any rate of many a Silver fir, are far too large to manufacture with a circular saw in the estate mill.

Douglas Fir, Sitka Spruce, &c.—There are several coniferous species which have been planted to a considerable extent in the last fifty years which are likely to assume an increasingly important place in timber production in Scotland. Chief among these may be mentioned the Douglas fir and the Sitka or Menzies spruce. Other species likely to be grown in increasing quantity are *Abies nobilis*, *Abies grandis*, and the Prince Albert's Hemlock spruce (*Tsuga Albertiana*). So far as can be judged, all these timbers can be usefully employed for estate work, and valuable information may be gained by observation made on estates as to the strength and durability of these woods and their suitability for sawing or for planing and dressing.

It may be of interest after dealing with these various timbers, hardwood and coniferous, to give a note of their specific gravities or weights, both green and seasoned. The weight of a cubic foot of any timber can be readily ascertained by multiplying 62½ lb. by the specific gravity of the timber.

	S.G. Green.	S.G. Air-Dried.
Oak	1·04	·76
Ash	·88	·75
Elm	·95	·69
Beech	·98	·71
Sycamore	·93	·66
Birch	·96	·65
Alder	·83	·54
Larch	·81	·59
Scots pine	·82	·52
Spruce	·76	·45
Silver fir	·97	·47

These figures are taken from Schlich's 'Manual of Forestry,' and represent fair averages. It will be observed that the least difference between green and air-dried timber is found in ash, and the widest difference in Silver fir and spruce. The variation in freshly felled coniferous timber, even in trees growing close together, is very wide. Silver fir has been

tested between 1·23 and ·77, and spruce presents an equally wide variation. Generally speaking, air-dried hardwoods weigh about 45 lb. per solid cubic foot, and coniferous species 35 lb.

SEASONING.

The seasoning of timber has been already incidentally referred to, but the question is one which is bound to demand greater attention in the future, and it has been too much overlooked in the past in connection with the conversion and utilisation of timber. The common fallacy that home timber is intrinsically inferior to foreign timber is largely accounted for by the more careful and methodical handling of the foreign wood. Much could be written on the subject, but the general principles involved are so well summarised in two paragraphs in the Bulletin of The Forest Products Research Laboratory already referred to, that no excuse is offered for quoting them :—

“ It is hardly necessary to stress the importance of seasoning in all its aspects. Sufficient is it to say that it is the primary factor governing more intensive utilisation and the conservancy of world supplies of timber. A well-seasoned piece of wood is more durable than when in a green state, thus delaying the period of renewal, with a consequent saving in demand. It is stronger when dry than in a green state, and therefore less liable to break, besides allowing smaller dimensions to be utilised, factors also tending to reduce requirements; while by proper seasoning and consequent elimination of defects, even greater saving can be effected than by careful conversion.”

And again, under the head of “ Objects of Seasoning,” the Report says :—

“ The three main objects of seasoning wood are to reduce its weight, and therefore the cost of transport; to increase its durability; and to prevent undue shrinkage and swelling, with consequent splitting and warping when the finished product is in use. These objects are achieved, principally at all events, by reducing the moisture contents, but it may well be that the seasoning process should receive a wider interpretation than this. Extra length of seasoning is often advertised as a special feature when offering hardwoods like oak, assuring stability in service, while the claim is made that certain softwoods, for use in flooring, harden with age. It is known that time is required to allow the moisture re-

maining in the wood to distribute itself evenly, but in addition it is probable that with the passage of time there is a gradual disappearance of any stresses set up within the timber during drying. Further certain chemical changes may eventually take place conducing, in some timbers, to greater stability and hardness."

The points for special consideration in converting and utilising home-grown timber on small estates may be summarised as follows :—

1. The circumstances of each individual estate should be fully considered, especially the extent of woodlands to be dealt with, its situation whether scattered or compact, the existence of a fixed or portable estate sawmill, and the labour available for felling, transport, and sawing.

2. If capital outlay is required upon buildings, machinery, &c., every care should be taken, after obtaining the best advice, to get really suitable labour-saving plant at the lowest possible cost.

3. The costing of the principal operations in connection with handling of timber for conversion can be done without much difficulty, and is a valuable check upon waste and loss. The knowledge that such costs are kept adds to efficiency in labour.

4. All timber felled, whether for sale or home use, should be properly measured and recorded. Costing of any kind is impossible without such a record.

5. Where there are mixed woods of hardwoods and conifers, or groups of pure hardwoods and pure conifers on the estate, full consideration should be constantly given as to which kinds of timber are the most saleable to merchants either standing or in the log.

6. It is, as a general rule, a mistake to attempt the conversion of hardwood timber in the estate sawmill with a view to subsequent sale of the converted material. The manufacture of high-class hardwood timber is much better done by experienced merchants with suitable machinery and thorough knowledge of the trade and markets.

7. The installation of a creosoting tank or some other form of treatment for preservation of timber is almost essential for the best utilisation of estate timber for home use. There must always be a good deal of material of sufficient size for fencing or for repairs to farm buildings, which is practically unsaleable in log, and which, if not treated with creosote or other preservative, is not worth conversion owing to lack of durability.

8. The sale of cut firewood can often be developed to quite a considerable extent if some trouble is taken to have a regular supply of dry wood in stock. If customers can count on getting *dry* firewood whenever they send for it, a fairly steady demand

may grow up. There may not be a great profit on the sale of cut firewood, but if the labour costs are carefully studied, there should always be a surplus, and this outlay is a means of useful utilisation for a large amount of timber which would otherwise be simply wasted.

9. Seasoning is important for any kind of wood, and should be aimed at even in building up a stock of fencing material, boarding, &c. Timber that is to be creosoted should be reasonably air-dried before immersion if the best results are to be obtained. There is much in the bright, clean appearance of sawn timber that has been seasoned under a roof or protected in some way.

10. Local demand should be catered for in any particular line, and a customer once secured should if possible be retained for future years. This can easily be done by taking a little trouble to supply exactly what is wanted, and above all to supply it promptly at the right time. There is often a local market for clog wood, sheep net stakes, birch for brooms, pea stakes, material for the repair of river banks, roadside protection fences, &c., all of which are worth cultivating.

11. The ideal to be aimed at is complete utilisation, and the elimination of all waste. This ideal may be scarcely possible of attainment at the present time. If an efficient portable plant for the manufacture of charcoal be eventually discovered, there is no reason why even the smallest branches should not be utilised, and bonfires in clearing felled areas for replanting would become a relic of the past.

SOME HAY AND PASTURE EXPERIMENTS.

By Principal W. G. R. PATERSON, B.Sc., N.D.A. (Hons.), West of
Scotland Agricultural College, Glasgow.

THE experiments dealt with in this short article were carried out at the College Experiment Station, Kilmarnock, and during the years that have elapsed since they were put down they have been inspected by many thousands of visitors from all parts of the College area, as well as by others from farther afield.

In devising and putting down these experiments, the chief objects in view were the following:—

1. To compare, particularly as regards *productivity*, *palatability*, and *permanence*, Red Clovers of different strains and from different sources.
2. To determine the relative merits of Perennial and Italian Ryegrass for hay and for grazing, their effect on the duration of the Red Clover, and the result from replacing Italian Ryegrass by Tall Oat Grass (French Ryegrass).
3. To ascertain the effects from a liberal seeding of Cocksfoot as compared with more moderate amounts on the yield of hay, the palatability of the grazing, and the succeeding crop when the land is ploughed up.

In all, twenty-four plots, each of one-tenth of an acre in extent, were utilised for these experiments, and the various seed mixtures were sown in the spring of 1923, with King Oats as the "nurse" crop.

EXCLUSION OF WILD WHITE CLOVER.

Wild White Clover was not included in any of the mixtures employed in these trials, and though that is not in keeping with actual practice, it was felt that the inclusion of Wild White would be almost certain to obscure the issue, particularly on the sections that were grazed.

1. STRAINS AND SOURCES OF RED CLOVER.

A good deal of investigational work had previously been carried out at the Experiment Station with different Red

Clovers, both when sown alone and when employed in mixtures, but a more extended trial was desired for confirmation of the results previously obtained, particularly when the Clovers were sown in mixtures.

There are really three types of Red Clover of special interest to the farmer, viz. :—

(a) The Early Flowering Red.

(b) The Late Flowering Red.

(c) The Wild Red.

(a) The Early Flowering Red Clover, often referred to as Broad-Leaved Red, is very widely used in hay and pasture mixtures. Under favourable conditions it gives a good yield of hay, and adds materially to the amount of the aftermath. It is very productive, the combined yield in hay and aftermath being greater than that obtained from the other types of Clover. The Early Red is not so lasting as the other two types ; in many cases it disappears in the second year. Longevity, however, judging from results obtained at the Experiment Station, appears to be much influenced by source of seed, and Early Flowering Red Clover from Canada or America would seem to last longer than many of the others.

(b) The Late Flowering Red, as the name indicates, is a plant which is later in flowering. It very materially increases the yield of hay, but contributes little to the aftermath, being generally inferior to the Early Flowering Red in that respect. This Clover is often described as Single Cut Cowgrass. Late Flowering Red is, however, a more lasting Clover than the Early Flowering, though this feature would again appear to be materially affected by source of seed.

(c) The Wild Red Clover is of more recent introduction into commerce than the Early Red or the Late Flowering Red, and up to the present it has not been very widely used in ordinary mixtures. It is a longer lived plant than the other types already referred to, and under favourable conditions generally behaves as a Perennial. Most of the strains of Wild Red are somewhat prostrate in habit of growth, especially in pastures ; but in hay mixtures the shoots are carried more erect. This type of Clover is not so productive as the others in the earlier years after sowing, but it beats them in regard to permanency.

CLOVERS INCLUDED IN THE TRIAL.

The Clovers included in the trial were of different types, and were drawn from different sources. They were as follows :—

English Early Flowering Red.

English Late Flowering Red.

American Early Flowering Red.

American Late Flowering Red.
 Canadian Early Flowering Red.
 Canadian Late Flowering Red.
 Welsh Red.
 Swedish Late Flowering Red.
 New Zealand Late Flowering Red.
 Chilian Perennial Red.
 Wild Red (M'Gill).
 Wild Red (Sutton).

Twelve of the twenty-four plots already referred to were utilised for the trial with different Clovers. They were sown down with a mixture which, with the exception of the Red Clover, which varied from plot to plot, was otherwise uniform for the twelve plots.

The mixture used and the rate of seeding per acre was as follows :—

Red Clover	4 lb.
Alsike Clover	2 lb.
Perennial Ryegrass	18 lb.
Italian Ryegrass	6 lb.
Cocksfoot	3 lb.
Timothy	3 lb.

Fortunately the grain crop with which the seeds were sown down in 1923, though very heavy, nevertheless stood up particularly well, and in view thereof all the Clovers got an excellent chance.

MANURIAL TREATMENT.

Early in the spring of 1924 a top-dressing of artificials was applied to the entire area at the rate per acre of—

1½ cwt. Superphosphate, 30 per cent.

½ cwt. Steamed Bone Flour.

1 cwt. Potash Salts, 30 per cent.

1 cwt. Sulphate of Ammonia.

In the succeeding years a similar manurial dressing was applied each spring to the section to be cut for hay, with the exception that the half-cwt. of Steamed Bone Flour was replaced with a half-cwt. of Mineral Phosphate.

In addition to these fertilisers, a dressing of Billingham Carbonate of Lime was applied in the spring of 1926 at the rate of one ton per acre.

DIVISION OF THE PLOTS.

After the dressing of artificial manure in the spring of 1924, the plots were divided transversely by a fence running right through the centre, and one-half of the area was reserved for hay and the other half for grazing.

This made it possible to note the behaviour of the Red Clovers, not only when cut for hay but also when grazed.

YIELDS PER ACRE.

The relative productiveness of the different Clovers as measured by the actual yield of hay per acre (first cut only) will be seen from the following table, which gives the yield in each of the four seasons 1924 to 1927 inclusive. The hay was weighed after being in rick about three weeks.

The average yields per acre from the different plots for these four seasons are also shown :—

Plot.	Strain of Clover.	Yield per acre.				Average yield for four seasons.
		1924.	1925.	1926.	1927.	
		cwt.	cwt.	cwt.	cwt.	cwt.
1	English Early Flowering Red	72	45	41	33	47 $\frac{1}{2}$
2	English Late Flowering Red	81	66	44	35	56 $\frac{1}{2}$
3	American Early Flowering Red	73	60	45	40	54 $\frac{1}{2}$
4	American Late Flowering Red	75	48	51	45	54 $\frac{1}{2}$
5	Canadian Early Flowering Red	77	61	45	41	56
6	Canadian Late Flowering Red	85	75	52	47	64 $\frac{1}{2}$
7	Welsh Red	90	75	43	31	59 $\frac{1}{2}$
8	Swedish Late Flowering Red .	81	70	50	39	60
9	New Zealand Late Flowering Red	71	60	40	29	50
10	Chilian Perennial Red	70	65	42	38	53 $\frac{1}{2}$
11	Wild Red (M'Gill)	60	55	47	34	49
12	Wild Red (Sutton)	62	55	46	35	49 $\frac{1}{2}$

It will be seen from the figures in the foregoing table that the highest average yield for the four seasons—namely, 64 $\frac{1}{2}$ cwt. per acre—was obtained on the section seeded with Canadian Late Flowering Red Clover, a result which was quite in keeping with that obtained in previous trials.

The next in order was Swedish Late Flowering Red with 60 cwt. per acre, but in no year did it come quite up to the Canadian Late Flowering Red.

The Welsh Red, with an average of 59 $\frac{1}{2}$ cwt. per acre, was very little behind the Swedish Late Flowering Red. This was the most promising Clover in the first season. It was still very good in the second season, but unfortunately proved extremely disappointing thereafter.

At the other end of the scale we find the English Early Flowering Red and the Wild Red Clovers. The position taken by the English Red may come as a surprise to some readers, but not to any of the numerous visitors who saw the

plots. This Clover gave quite a fair return in the first year, and for leys of very short duration it is in every way suitable; but many other strains are superior to it when the land has to be down for three or four seasons.

The fact should not be overlooked that the yields of hay represent the first cut only. The aftermath was also cut but not made into hay. It was fed green to the cows, the furthest forward plots being used first, and the others in succession. In these circumstances reliable comparative yields for aftermath could not be obtained.

PALATABILITY OF THE DIFFERENT CLOVERS.

The hay produced on the different plots was secured in very good condition each year, and all of it was of first-rate quality. The main feature of difference was the varying amount of clover present. This varied according to the strain employed, but in so far as could be judged from the feeding of the hay to the stock, that factor did not seem to have any material effect on palatability.

On the section which was grazed the pastures were carefully examined from time to time, but even there it did not appear as if the stock—young cattle and sheep—had any preference for a particular strain of Clover, and all the Clovers, including even the Wild Reds, were regularly and evenly grazed. Further, the behaviour of the Clovers on the grazed section was very similar to that of those on the section reserved for hay, and the grazing did not seem to lessen or add to the prominence of the Clovers in the pasture unless in the case of the Wild Reds, which undoubtedly came to greater prominence on the grazed section in the first two years than on the section reserved for hay.

PERMANENCE WHEN CUT FOR HAY OR WHEN GRAZED.

The twelve strains of Red Clover sown down in 1923 showed great variation as regards permanence, and the results in this connection are of very special interest.

The Wild Reds seem to have abated but little in vigour during the four years that have elapsed, and, as was to be expected, they have proved the most permanent of all the Clovers tested.

As previously indicated, the Late Flowering Red Clovers generally last longer than the Early Flowering Reds from the same country of origin, and in every case where the two types were secured from the same source the Late Flowering Red has shown greater persistence than the Early Flowering Red.

The first Clover to disappear from both the hay and the grazed sections was the English Early Flowering Red. This Clover was quite up to our expectations in the first year, and the aftermath from it was very good, but it proved of little account thereafter, as there was a rapid falling off in the second year, and it was then not at all prominent either in the hay or in the aftermath.

The next variety to disappear was the Welsh Red. This Clover, though exceptionally good in the hay crop, the aftermath, and on the grazed section in the first year, and still very good in the second season, ultimately proved a great disappointment, as thereafter it disappeared entirely.

For the two years that it did last, however, it gave an excellent account of itself, and for short leys is undoubtedly one of the best of the Red Clovers.

The Canadian Late Flowering Red Clover and the American Late Flowering Red Clover were, on the other hand, still very prominent even during the fourth season, and would fully justify being classified as long-lived Clovers. These two types, next to the Wild Reds, were certainly the most lasting of all the Clovers employed in the experiment.

Another Clover still very good throughout the fourth season was the Chilian Perennial Red, but this unfortunately is a strain of Red Clover not obtainable in commerce, and it must not be confused with the ordinary Chilian Red, which in our previous trials has always been one of the first of the Clovers to disappear.

The other five Clovers—viz., the American Early Flowering Red, the Canadian Early Flowering Red, the New Zealand Late Flowering Red, the English Late Flowering Red, and the Swedish Late Flowering Red, did not show very material differences, and a fair percentage of plants still persisted throughout the four seasons.

The Swedish Red has not entirely confirmed our earlier experience as to its permanence, for it was not quite so vigorous or prominent in the third season as we expected. In former trials this variety when sown alone had persisted in quite a vigorous state for five years.

Like the Welsh Red, it was exceptionally good in the first two seasons, but thereafter, though the Clover plants were present, there was a falling off in vigour and productiveness in the third and fourth seasons. Indeed, it would almost seem as if the Cocksfoot had been materially encouraged on this plot through the storing up of nitrogen accumulated by the Red Clover, and in the later years of the trial was actually having an adverse effect on the Clover.

From the trial with Clovers it was quite clear that of those employed in the experiment, the Wild Reds, the Canadian and American Late Flowering Reds, and the Chilian Perennial Red (a type, as already stated, not obtainable in commerce)

were the most lasting, and should be selected when the land is to be down for three or more years. On the other hand, for very short leys the English Red and the Welsh Red are undoubtedly eminently suitable under conditions similar to those prevailing on the trial grounds.

2. RELATIVE MERITS OF PERENNIAL AND ITALIAN RYEGRASS FOR HAY AND FOR GRAZING.

Italian Ryegrass as a component in seed mixtures, in spite of many admirable features, is, in some districts, rather out of favour, and the following are some of the reasons that have been advanced in justification of its entire exclusion:—

- (a) That it is at the best a comparatively short-lived plant, and will soon disappear.
- (b) That the actual weight of hay per acre produced by Italian as compared with Perennial is disappointing, and never quite up to what the appearance of the crop prior to cutting would lead one to expect.
- (c) That it has an adverse effect on the Red Clover, and reduces the amount thereof in the hay and the aftermath.

It was partly with a view to ascertaining to what extent these beliefs held good in the somewhat wet climate of the West of Scotland, but also in order to determine definitely the relative merits of Italian and Perennial Ryegrass for hay and for grazing, that the following experiment was put down.

Six plots, each one-tenth of an acre in extent, were utilised for the trial, and as in the case of the experiment with strains of Red Clover, the seeds were sown in the spring of 1923 with King Oats as the "nurse" crop.

The seeding was at the following rates per acre:—

Grasses and Clovers in the mixture.	Plots.					
	1.	2.	3.	4.	5.	6.
Perennial Ryegrass .	lb. 30	lb. 18	lb. —	lb. 18	lb. 12	lb. 12
Italian Ryegrass .	—	12	30	—	6	—
Tall Oat Grass .	—	—	—	—	—	6
Timothy . . .	2	2	2	4	4	4
Cocksfoot . .	3	3	3	6	6	6
Red Clover (Canadian)	4	4	4	4	4	4
Alsike Clover . .	2	2	2	2	2	2

The manurial treatment was exactly the same as that indicated for the Clover trial, and in the spring of 1924 these

plots were also divided transversely and one-half reserved for hay, and the other utilised for grazing.

The trial was continued for three seasons, and the yield of hay per acre from each plot in each of the years, as well as the average for the three seasons, is given below :—

Plot.	Yield per acre.			Average yield for three seasons.
	1924.	1925.	1926.	
	cwt.	cwt.	cwt.	cwt.
1	70	55	39	54 $\frac{2}{3}$
2	60	65	41	55 $\frac{1}{4}$
3	65	50	42	52 $\frac{1}{3}$
4	60	55	40	51 $\frac{2}{3}$
5	70	54	40	54 $\frac{2}{3}$
6	70	60	43	59

As regards the relative value of Perennial and Italian Ryegrass for hay, as measured by productivity, it will be seen from the foregoing yields that the effect of entirely replacing Perennial Ryegrass with Italian Ryegrass has resulted in a slight reduction in the yield of hay in the first two seasons and on the average of the three seasons.

Prior to cutting, the Italian Ryegrass section (Plot 3) looked fully the best, but did not bulk so well as hay, and the section seeded with 30 lb. Perennial Ryegrass (Plot 1) gave a higher yield. Possibly the reason for this may be the fact that Italian Ryegrass has a hollow stem, whilst that of the Perennial is more solid, hence in hay-making there is not the same shrinkage with the latter.

The slight superiority in the third season of the plot seeded with 30 lb. Italian Ryegrass was somewhat of a surprise, as the Italian by that time had practically died out. The reason for this superiority was doubtless due to the prevalence even in the third season of the Canadian Red Clover, which was very abundant, combined with the development that had taken place in the Cocksfoot and Timothy components in the mixture.

Fully the heaviest yield of hay was obtained on the section in which Tall Oat Grass was included (Plot 6), the average for the three seasons being 59 cwt. per acre.

The second best result was obtained from a seeding containing 18 lb. Perennial Ryegrass and 12 of Italian (Plot 2).

The aftermath on all the plots was exceptionally good. On Plot 1 it consisted in the first year almost entirely of Red Clover, the Perennial Ryegrass being very little in evidence either then or in the aftermath of succeeding years.

On Plot 2 the aftermath was even better, and contained a

certain amount of Italian Ryegrass as well as Red Clover, but the opinion of the great majority of the visitors who saw the plots was that Plot 3 provided much the best aftermath in the first two years. There was an exceptionally nice mixture of Red Clover and Italian Ryegrass on that plot in these years, though, as was to be expected, the Italian practically died out in the third season. The Canadian Red Clover, however, was still quite vigorous in both the hay and the aftermath, and instead of having been killed out by the Italian Ryegrass, it really outlived that plant.

The increased amount of Cocksfoot and Timothy in Sections 4, 5, and 6 would seem to have had a greater adverse effect on the Clover in the second and third years, as on these plots the aftermath was not so good as on the other three sections.

PREFERENCE OF STOCK FOR ITALIAN RYEGRASS.

Turning to the grazed section, in season 1924 the plots were grazed with young cattle, and as these were allowed to roam at will over the entire area, some interesting facts were brought to light. In the first year, Plot 3, which contained a seeding of 30 lb. Italian Ryegrass, seemed to be much preferred to any of the other plots, and it was very closely grazed throughout the entire grazing period. As a matter of fact, when the young cattle were put out in the beginning of the season, they hardly touched any of the other five plots until the Italian Ryegrass plot was eaten quite bare. Their next preference was Plot No. 2, the seeding of which contained 12 lb. Italian, but Plots 1, 4, and 6 were least in favour. The presence of the Tall Oat Grass in Plot 6 seemed to be an additional reason for that plot not being in favour.

In the following season, sheep as well as young cattle were utilised for the grazing of the plots, and the result was exactly the same, with the exception that Plot 6 was a little more in favour than in the previous year, that being in all probability due to the fact that the Tall Oat Grass had almost entirely disappeared from the grazed portion of the plot, though it still remained abundant in the section cut each year for hay. It has been held by many for a considerable time that Tall Oat Grass never flourishes under grazed conditions, and that view is supported by the experience gained from this experiment.

By the year 1926 the Italian Ryegrass had disappeared from the grazed section, and Plot 3 was no longer the favourite with the stock.

The result of this trial fully justifies the inclusion of Italian Ryegrass as a component in the seed mixture. It may not give quite the yield of hay that Perennial Ryegrass gives, but the aftermath is much better, and the fact that the plant is greatly relished by stock is a matter of prime importance.

Further, the criticism that Italian Ryegrass tends to kill out Red Clover does not seem to be justified.

3. EFFECTS FROM A LIBERAL SEEDING OF COCKSFOOT.

The third line of investigation calls for only a brief reference. The object of this experiment has already been indicated, but for practical purposes its value was greatly lessened because of the exclusion of Wild White Clover. In spite of that, however, certain aspects of the results are both interesting and instructive. Six plots were utilised, and the seed mixtures employed were as follows :—

Grasses and Clovers in the mixture.	Plots.					
	1.	2.	3.	4.	5.	6.
	lb.	lb.	lb.	lb.	lb.	lb.
Cocksfoot . . .	18	12	9	9	6	3
Perennial Ryegrass . .	—	12	12	12	12	12
Italian Ryegrass . . .	—	—	6	6	6	6
Timothy	—	—	—	—	2	2
Tall Oat Grass	—	—	—	—	—	6
Alsike Clover	6	6	3	3	3	3
Canadian Red Clover	—	—	5	5	5	5

Danish Cocksfoot was used for all the plots with the exception of Plot 3, on which it was replaced by New Zealand Cocksfoot.

The scheme of manuring and the general plan of the experiment was the same as in the case of the other two already dealt with, the plots being divided transversely, one section reserved for hay and the other grazed. The yields of hay for the three seasons were as follows :—

Plot.	Yield per acre.			Average yield for three seasons.
	1924.	1925.	1926.	
	cwt.	cwt.	cwt.	cwt.
1	42	30	41	37 $\frac{2}{3}$
2	61	50	45	52
3	70	45	36	50 $\frac{1}{3}$
4	67	60	43	56 $\frac{2}{3}$
5	62	55	47	54 $\frac{2}{3}$
6	60	55	47	54

From the outset the Cocksfoot Alsike mixture (Plot 1) proved very disappointing, as the Cocksfoot practically usurped the plot even in the first year, the Alsike clover being but little in evidence. As was to be expected, the yield of hay was low, and on the grazed section the pasture was not at all relished by the stock; indeed, of the entire twenty-four plots in the three experiments this proved the one least in favour, and it was the worst grazed in each of the seasons. No doubt the inclusion of Wild White Clover would have made a material difference in that respect.

The reduction of the Cocksfoot to 12 lb., and the inclusion of a similar amount of Perennial Ryegrass, while giving a better yield of hay, effected but little improvement in the grazing, and this plot, like the previous one, was not well grazed.

The other plots were much more in favour, even Plot 6, which contained Tall Oat Grass, being preferred to Plots 1 and 2. The favourite, however, in this section appeared to be Plot 5, and possibly the moderate amount of Cocksfoot contributed to that result.

There appeared to be but little difference in the results from New Zealand (Plot 3) and Danish Cocksfoot (Plot 4). The former gave a higher yield of hay in the first year, but the Danish proved superior in the second and third years, and on the average of the three seasons.

Perhaps the most noteworthy result from this trial was the effect of the Cocksfoot and Alsike Clover seeding on the oat crop when the land was ploughed up. In view of an oat variety trial also in progress, the actual yields on each of the plots were not strictly comparable, but judging from the control plots which alternated with the others, the effect of the seeding referred to was to reduce the yield of grain by almost 6 cwt. per acre.

There is, of course, good reason to believe that this reduction in yield was not entirely on account of the heavy seeding with Cocksfoot. The absence of the Red Clover was undoubtedly a factor also contributing to the result, and this is an aspect of the trial that calls for further investigation before a definite pronouncement can be made.

PATRICK BELL AND THE CENTENARY OF THE REAPING MACHINE.

By PROFESSOR JAMES HENDRICK, B.Sc., F.I.C., University of Aberdeen.

AT the end of the eighteenth and the beginning of the nineteenth century much interest was taken in the advance of agriculture. That was a period of expansion in industry, and many machines were being invented for industrial use. It is quite natural that at this period interest should also have been taken in attempts to improve the age-old implements which were used in agriculture. It was a period also when attempts began to be made to apply science to agriculture and to promote agricultural education. To the end of the eighteenth century, for instance, we owe all our old foundations for agricultural education, such as the Chair of Agriculture in Edinburgh, the Sibthorpian Chair of Rural Economy in Oxford, and the Fordyce Lectureship in Agriculture in Aberdeen.

For ages the sickle and the scythe have been used for reaping corn. Sickles are known to have been in use for this purpose from the late Stone Age. It is recorded that in Roman times some attempt to improve the traditional methods of cutting corn by the use of stripping or rippling machines ¹ was made in the Plains of Gaul, but until the beginning of the nineteenth century the sickle remained the chief reaping instrument.

At the end of the eighteenth century and the beginning of the nineteenth century premiums were offered by different agricultural bodies and by the Society of Arts for the invention of a reaping machine, and such premiums were claimed again and again by inventors, and in several cases the claims were allowed and premiums awarded. Among other bodies the Highland and Agricultural Society of Scotland offered such premiums. The literature of the period contains many references to the invention of reaping machines, and several such machines are described and figured. The attention which was being paid to the subject is shown by an article signed "D. C.," which was published in 1828, "On the Use and Advantages of a Reaping Machine," ² in which the writer states that "whilst the history of the sickle is nearly coeval

¹ Loudon's 'Encyclopædia of Agriculture,' vol. i., 2nd ed., 1831, pp. 26-27, gives an account of this implement and its use.

² 'Quarterly Journal of Agriculture,' vol. i., 1828, pp. 136-7.

with that of the human race, it seems to have been exempted from those changes to which other objects have from time to time submitted. Our manufactures have risen and flourished by means of inventions with which our fathers were altogether unacquainted. Even in our own age our agricultural implements, though still extremely simple in their structure, have been almost wholly changed. The flail, which has occupied the place of the ox which trode out the corn, has been supplanted by the thrashing machine, which is still receiving valuable improvements. The fanners now separate the chaff, which until our times was driven by the uncertain breeze. The plough has been so much altered and improved as no longer to appear the same machine. . . .

"Amid these general changes, and the revolution of many generations, the sickle remains in all its primeval simplicity. Thousands of ages have elapsed, and the sickle has undergone little or no change in its form or in its use."

The writer proceeds to state reasons "which appear to me to be conclusive as to the use and advantages of an efficient reaping machine." The chief of these reasons were (1) that all corn crops come to maturity at nearly the same time, (2) that country labourers are reduced in number, (3) that there is now a greater quantity of corn to be cut than formerly, and (4) that harvest work has become more expensive.

The arguments used against reaping machines at the time appear to be of the same nature as those which were used against the introduction of other machines—namely, that they would displace work-people, and especially old and infirm people, and that they would destroy the charm of the country. Another objection with which the writer deals at some length is that the production of a reaping machine is "hopeless and impracticable." He replies to this objection by pointing out the many hopeful attempts which were then being made to produce a reaping machine, and refers in particular to certain machines recently invented. The first he mentions was produced by Mr James Smith, Manager of Deanston Cotton Works, Doune, to which, he records, an "Honourable Committee of the Highland Society of Scotland," which had inspected and tried the machine, "felt themselves called upon to recommend earnestly that the Society be pleased to make him a present of 200 guineas as a mark of their appreciation and as an encouragement to labour for the public good." This was in 1815. The writer admits, however, that the machine did not turn out a success, but continues: "Certainly our hopes are very much damped by this and many other failures. . . . We are not warranted to suppose that the whole inventive powers of man have already been exhausted in abortive attempts at the construction of the reaping machine." He proceeds to refer to a very hopeful machine.

“invented by Mr Patrick Bell, a young man in the County of Forfar, of high attainments in many of the Sciences.”

In the same issue of the ‘Quarterly Journal’ there is an illustrated account of Bell’s machine,¹ and it seems apparent that the editor, after receiving the paper of “D. C.,” had

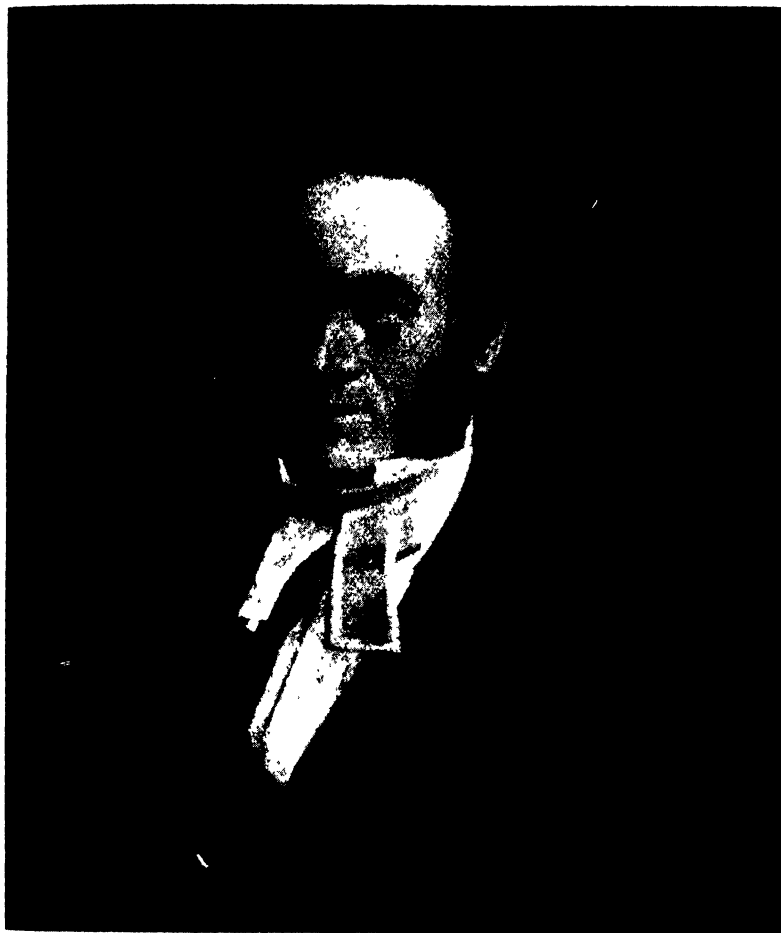


Fig. 1.—*The Rev. Patrick Bell, D.D.*
From a photograph in the possession of his family.

communicated with “our ingenious friend Mr Bell,” and obtained from him a description “of this beautiful piece of mechanism.” The plate illustrating the machine is a very clear one, and the description, which is not signed, but was no doubt written by Patrick Bell himself, is quite terse and

¹ ‘Quarterly Journal of Agriculture,’ vol. i. 1828, “Description and Plate of a new Reaping Machine invented by Mr Patrick Bell, A.M.,” pp. 216-9.

technical and free from any attempt at advertisement of the machine or even of any claim that it would accomplish anything.

The next issue of the Journal, however (November 1828), supplies it with a good advertisement,¹ for it gives an account of trials which were made with it in September of that year, and states that the writer, apparently the editor, had seen it at work, and "we feel satisfied that it possesses not only all the ingenuity which we formerly ascribed to it, but complete efficiency." There follows a report "which was subscribed on the field by the Member of Parliament and the Sheriff of the County of Forfar and by 40 landed proprietors and practical agriculturists who were present," and is dated, Powrie, 10th September 1828. This report states that two machines were on use in the trial, "constructed on the plan of the model transmitted by Mr Bell to the Highland Society in December last," one made chiefly by Mr Bell himself and the other by a "professed mechanic in Dundee." The machines are stated to have cut oats, barley, and wheat at the rate of about an imperial acre per hour; they were each moved by a single horse, and, it was stated, could be made for about £30. The "machine was newly out of the hands of the workmen—the horse was wholly untrained—the people without experience in such work—the corn, also, reserved on purpose for this exhibition, being too ripe, was broken down and not in a good state for reaping; and though we were well pleased with the operation of both machines we anticipate still greater facility and superior management by additional practice. We consider it unnecessary to advert to the advantages attending the introduction of an efficient reaping machine, as these advantages are universally acknowledged; but we beg leave to express our conviction that Mr Bell's reaping machine will come immediately into general use—that it will confer a signal benefit on agriculture—that his invention is of national importance—and that he deserves the highest encouragement for his active and strenuous exertions for the public good."

The 'Quarterly Journal' returns to the subject of Bell's machine at the end of 1832, when an article is published² "On the Working of Bell's Reaping Machine." In this article it is stated that as the machine has now been working for some years sufficient facts have been collected concerning its efficiency to be of interest. It is pointed out that various machines have been made by country mechanics, many of whom have made attempts to improve upon the original, but that no modification has yet turned out an improvement.

¹ 'Quarterly Journal of Agriculture,' vol. i., 1828, "On the Practical Value of Mr Bell's Reaping Machine," pp. 331-2.

² Ibid., vol. iv., pp. 84-89.

The writer gives details as to the number of machines that have been working, and as to the acreage cut by them in each year between 1828 and 1832. It is stated that in 1832 ten machines were at work which cut among them 320 Scotch acres, the cutting varying from 70 acres with the machine which did most work to 6 acres in the case of the machine which did least work. Experience has shown, he says, that when all conditions are right the machines could cut 12 acres a day, and that the cutters require sharpening after 50 acres. He proceeds to estimate the cost of working, and gives a number of actual figures of costs taken from a farm with about 60 acres of corn to cut. These figures show that the cost is considerably less than the cost of working in the ordinary way, and that it is steadily being reduced with increasing experience. He estimates the cost of cutting 55 acres in 1832 at 3s. 10½d. an acre, as against 11s. to 13s. an acre for cutting in the ordinary way. He further states that he believes the cost can be brought down to as low as 2s. 10½d. to 3s. per acre with improved working.

The great amount of attention which Bell's machine attracted immediately after its production is also shown by Loudon's 'Encyclopædia of Agriculture,' the second edition of which was published in 1831. The section on reaping machines opens with the statement that, though these machines "are as old as the time of the Romans, one of an effective description is yet a desideratum in agriculture; unless the recent invention of the Reverend Patrick Bell can be considered as supplying that desideratum." The article, after referring to the many reaping machines which had recently been invented and naming a few of these, proceeds to give a full description of Bell's machine.¹ This description includes two full-page illustrations, the first of which shows the reaping machine at work driven and steered by an elegantly dressed gentleman in a tall hat. The second is a diagram of the machine, which shows very clearly all its working parts. The description is a very full one, which would enable any one with mechanical knowledge and with the help of the diagram to imitate it and reproduce it. The account of the machine ends with the statement: "Few men deserve better of his country, and indeed of every civilised country where agriculture is practised, than Mr Bell; for surely that invention must ultimately be of great benefit to men and women which enables them to do by horses, oxen, or steam, that which they have hitherto done by a most severe description of manual labour, rendered doubly oppressive by the season of the year in which it must necessarily be performed."

It is a very interesting fact that the original machine

¹ Loudon's 'Encyclopædia of Agriculture,' vol. i., 2nd ed., London, 1831, pp. 422-427.

made by Bell is still in existence, and is now in the Science Museum at South Kensington. Bell himself wrote an article on his reaping machine in the 'Journal of Agriculture' in 1854,¹ in which he gives an account of what happened to the original machine up to that date. It continued to be used on his father's farm, Mid-Lioch, Auchterhouse, until the farm was given up. It was then taken to his brother's farm at Inchmichael, where it continued to be used. It was put in a thorough state of repair and shown at the Highland Society's Show in August 1852. Bell states: "It passed off then for an improved machine," but he points out that only slight improvements had been made by himself in the machine as the result of experience. When the improvement was made, "to prevent any mistake in its construction I made the calculations myself and the wooden model patterns which my brother got executed in Dundee." He insists that much prejudice was caused against the machine by the fact that many who ordered machines on their own account were disappointed because "they were too weak, ill made, and were continually breaking." The one he made himself, however, was strongly made, so strongly that many people held that it was clumsy, but it was able to work season after season on his father's farm without breaking down.

This machine continued on his brother's farm for many years, and was eventually secured for the Science Museum at South Kensington. The picture of it as it exists at the present day in the Museum is shown on the opposite page. It will be seen in the picture that the original cutters are lying in front of the machine. New cutters of an improved pattern, somewhat resembling those used in modern machines, had been added to the machine at some time before it found its way to the Museum. Bell himself states in his paper in the 'Journal of Agriculture': "I state it precisely, that from the first night on which it was started up to August 1852, when it was exhibited at Perth, no one has invented or added a single alteration or improvement upon the implement but myself. My brother at Inchmichael has the great merit of having kept the thing alive; had it not been for his admirable perseverance the machine would have been dead and forgotten years ago."

Patrick Bell, who invented this reaping machine, was a son of a small Forfarshire farmer who had a large family. He was born at the beginning of the nineteenth century, and in 1828, when he made his first machine, was about twenty-seven years of age. He had himself worked on the farm for some time, and then managed to work his way as a student to St

¹ "Some Account of Bell's Reaping Machine by the Inventor, the Rev. P. Bell," 'The Journal of Agriculture,' No. 43, New Series, January 1854, pp. 185-204.

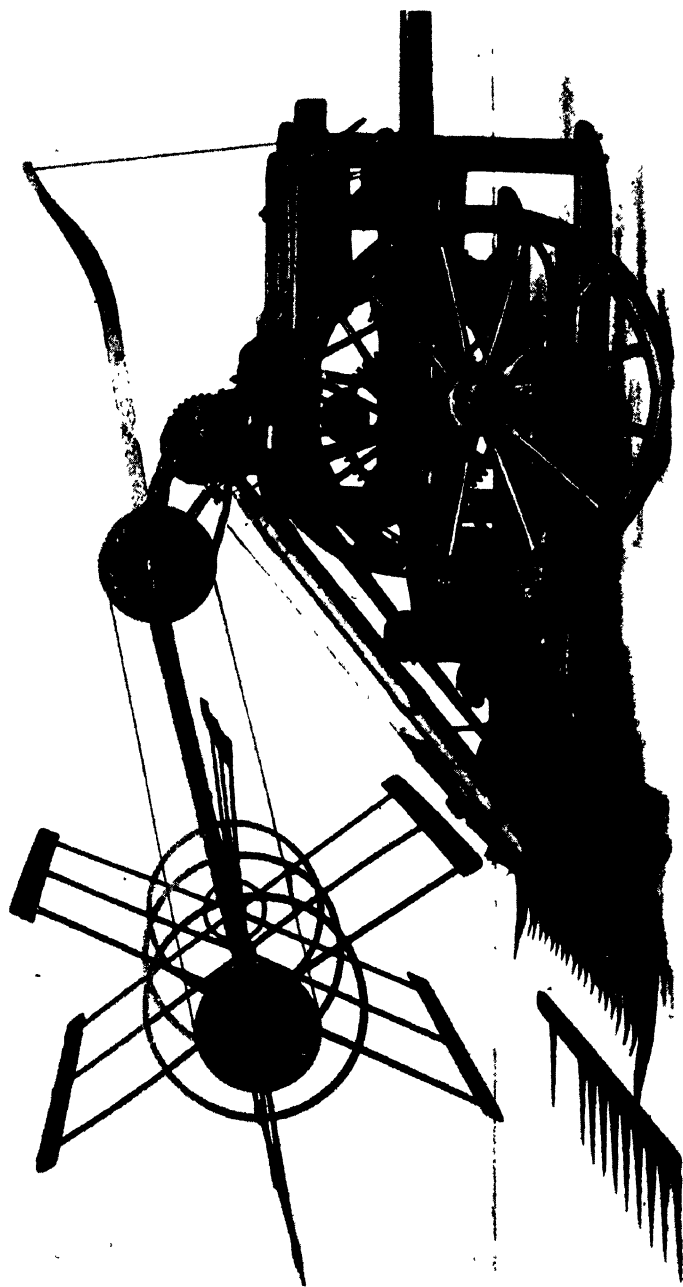


Fig. 2.—*Bell's Original Reaping Machine.*
From a photograph of it as it now exists in South Kensington Science Museum.

Andrews University, where he took his M.A. degree. He belonged to the type of Scottish student who has to live frugally and eke out his resources by teaching and by farm work during vacations. At the time he invented his reaping machine Bell was a Divinity student at St Andrews. He seems all his life, however, to have had a great interest in mechanics, and both on his father's farm, while he lived there, and afterwards at his manse at Carmyllie, he kept a workshop, and worked at all kinds of mechanical inventions. He made many models of machines and implements, a few of which still survive, including models of his reaping machines, two of which are now in the Royal Scottish Museum in Edinburgh, while another was recently presented by his daughters, who live in Aberdeen, to the Agricultural Department of the University of Aberdeen.

While he was still living on his father's farm Patrick Bell became interested in gas lighting, which was then a new and wonderful invention which had recently been introduced into some of the larger cities. He set up a small plant of his own on his father's farm, and proceeded to light the farm house by gas, a thing which was considered a wonder by the whole neighbourhood and caused much local talk.

Another industry which has now become of world-wide importance, but which was then in its infancy, was the sugar-beet industry. The manufacture of sugar from the beet had been started in France during the Napoleonic wars. Up till then the French supply of sugar, like the British, had been derived chiefly from the West Indies, but when the British Fleet obtained command of the sea they cut off the French supply. The great Napoleon therefore encouraged the attempts which were being made to obtain sugar from the beet. After the war the sugar beet industry had a severe struggle for many years, and it was only with the gradual improvement of the beet by selection that the industry became thoroughly established. In 1828 the beet had not yet been so improved as to produce a high percentage of sugar, and the industry was only a struggling one, and was entirely confined to comparatively limited districts on the Continent. Evidently Bell had read about this industry and become interested in it, for it is recorded that he grew beet on his father's farm and manufactured sugar from it which he sold to a merchant in Dundee. Such incidents clearly indicate the type of man he was.

After the completion of his Divinity Course at St Andrews, Bell went to America in 1833, where he acted as tutor to the family of the Hon. Adam Fergusson, the founder of the township of Fergus, Wellington County, Ontario. He also preached occasionally in St Andrews Church in this Scottish settlement. During his Canadian sojourn he wrote a kind of

journal giving an interesting account of the state of the country, of its plants and animals, of its people, and of anything else which happened to attract his attention. This journal has been preserved in his family, but has never been published. His daughters recently allowed the present writer to go through it. Nothing could bring more vividly to one's mind the observant and inquiring and inventive type of person which Bell was than a perusal of these journals. As an illustration his visit to Niagara may be mentioned.

Before he visited America, Bell had evidently read accounts of Niagara, and the accounts of those days do not appear to have minimised the height and magnitude of the Falls. A visit to these wonderful Falls is apt to be disappointing at first, because their great width dwarfs the height and makes it appear less than was expected, especially when seen from above; when looked at from below the height seems much more imposing.

When Bell first saw the Falls soon after his arrival in America, he was greatly disappointed, and was sure that their magnitude had been much exaggerated. Most people would have left it at that. Not so Bell. He proceeded to determine the height, width, and volume for himself, and his journal carefully records all his measurements. He secured an old theodolite and made a careful triangulation of the Falls, which he gives in full, together with diagrams and examples of his methods of calculation. He made two sets of measurements, from which he worked out figures for the height and width both of the American and the Canadian Falls, which correspond very closely with the best modern measurements. He also gives a diagrammatic picture of the Falls, showing all the main features.

The measurement of the volume of water passing over the Falls was a more difficult problem for him, but he tackled it also; and although he admits that his data were incomplete and were not sufficient to give him a very accurate estimate, he is able to work out an estimate of the volume which was passing over at the time of his visit.

He gives notes of the nature of the rock, hard limestone above with soft shale below, and arrives at quite correct conclusions as to the geological nature of the Falls and the Niagara escarpment. After reading all this account one cannot help feeling that a great engineer was lost in Patrick Bell; his natural bent seems to have been towards engineering problems, and the sight of a great Fall like that of Niagara sets him to work at once to obtain accurate data concerning it. He makes some caustic remarks about the poetical imagination of some of those who had described the Falls before him, and who, instead of treating this great natural wonder in a scientific and truthful spirit, had allowed them-

selves to be carried away, and put down all sorts of wild and extraordinary statements about it.

In his description of the Niagara neighbourhood, as in various other parts of his journal, the fact that he is a farmer's son and interested in agriculture shows itself. He describes the nature of the surrounding country, which then appears to have been heavily wooded, with only some small clearings for agricultural purposes. Even Goat Island, which is now part of a public park, was then covered with forest, and quite wild except for one small clearing with a hut for a poor family and a "kailyard." There was then no town of Niagara, either on the American or on the Canadian side, but a little place called Manchester on the United States side and the village of Chippawa on the Canadian side.

During his stay in Canada, Bell made daily notes of the weather, and recorded the temperature either once or twice a day. His weather records are given in tables at the end of the two volumes of his journal, and, except for a few days when he was away from home, give his daily observations from November 1833 to April 1837. He also works out the mean temperature for each month, and gives notes as to the rainfall and snowfall.

Bookbinding appears to have been another of his hobbies, and at some time after his return to Scotland he bound the two volumes of his journal, one of them in full calf and the other in half calf.

He evidently intended to add another volume, for at the end of the second volume he states that he has quite sufficient matter for another volume. He adds, "This one is too large already. . . . I have yet to speak of learned emigrants—their prospects and success—the Clergy—the state of the Church and religion—the state of education—Colleges, Schools, &c.—the morality of the people, their habits, principal ruling feelings—politics—merchants and merchandise—trades and trades-people, &c. I meant to have drawn a comparison between the profits of a Canadian farm and one of equal size at home. I have the calculations made, but cannot now be troubled to write them out. I shall do it afterwards perhaps." Then follows his signature and the date, 14th April 1837. Unfortunately the further volume on all these interesting matters is not known to exist. Probably it was never written. His comparison of the profits of a Canadian farm and one of equal size at home would have been very interesting from many points of view.

Patrick Bell stayed for about four years in what was then called Upper Canada, and is now the Province of Ontario, in the town of Fergus, which is not far from Guelph, in which the oldest and most famous of the Canadian Agricultural Colleges is now situated. The city of Guelph celebrated the

centenary of its foundation in 1927. In its centennial edition 'The Guelph Mercury' published an account of Patrick Bell and his invention, and duly records the connection of the inventor of the reaping machine with Ontario. This article contains a letter written in 1923 by the late Mr John Bell, the son of Dr Patrick Bell, who died in Aberdeen in 1924, giving some details of his father's life and work. 'The Mercury' concludes its account of Bell as follows: "Patrick Bell's invention of the reaper made for others immense fortune, but he was satisfied in seeing the benefit bestowed upon the world. He was a true pioneer in many fields of labour, and if he were able to return to Wellington County now he would find a great agricultural land where once there was wilderness, and his invention played no small part in the great transformation. The modest minister of the Parish of Carmyllie has been dead nearly sixty years, but the niche he carved in the Hall of Fame will never be erased." When the present writer was in Guelph last summer he found that great interest was taken in the career and reputation of Bell as well as in his connection with Ontario. In the Public Library in the city photos of Bell and his reaper are shown. It is stated that he had with him in Canada a model of his machine, and that he left this behind him when he returned to Scotland. If so, it has been lost, for, in spite of efforts to discover it for the local museum, it cannot be traced.

Bell left Canada in 1837, and after a further period as a tutor and teacher in this country was appointed parish minister of Carmyllie in Forfarshire; the rest of his life was spent quietly in Carmyllie, where he died in April 1869. He married late in life, and after his death his wife and family moved to Aberdeen, where his two daughters are still living. He never lost his interest in mechanics, and though he continued to work at various instruments from time to time in a workshop in his manse, he never came much before the public or brought out any other notable invention. When the reaping machine began to come into general use after the great Exhibition of 1851 the part which Bell had played in its development was recognised, and various honours were bestowed upon him, including the degree of LL.D. from his old University of St Andrews.

After the outbreak of activity in the invention of reaping machines in the early part of the century there appears to have been a lull from about 1830 until after the great Exhibition of 1851, except in the United States, where considerable activity in the development of such machines appears to have been shown between 1830 and 1850. The machines shown at the great Exhibition revived interest in the subject in this country, and in particular the arrival of machines from America attracted a great deal of attention and led to much con-

troversy. Many accounts have been written of the early history of the reaping machine. 'The Book of Farm Implements and Machines,' published in 1858, after the introduction of the American machines into this country, gives an account of the subject, and mentions many of the early British machines.¹ A still better account is given in the 'Transactions' in 1865 by Jacob Wilson.² Both of these accounts mention all the leading machines which were tried in this country before 1830, and show that a number of people in different parts of the country were at that time endeavouring to produce a practicable reaping machine. 'The Book of Farm Implements and Machines,' for instance, mentions about one dozen different machines, British and American, and adds that it would be easy to extend the list, but that few of them "seem to have proceeded much beyond the formation of an imperfect model." It mentions four machines which certainly got beyond this stage—namely, a machine invented by Mr Smith of Deanston in Perthshire in 1812, which was awarded premiums by the Highland and Agricultural Society and by the Dalkeith Club. This machine had a circular cutter, and worked on a quite different principle from Bell's. The second machine it mentions as worthy of special notice was invented by Mr Joseph Mann, Raby, Cumberland, in 1820. A full-sized machine was first exhibited in 1822, and was gradually improved until 1830. This machine was exhibited at the Highland Society's Show at Kelso in 1832. In Mann's machine, as in Smith's, the cutter revolved, and worked on a quite different principle from Bell's.

The third machine considered worthy of special attention was Bell's, which is spoken of as "A really effective reaping machine"; and it is stated, "it is difficult to account for the reason why Bell's machine has not been more extensively adopted. For a period of nearly twenty years it was successfully used, and yet it seems doubtful whether with practical agriculturists it has so high a reputation as its American rivals—the machines of Hussey and M'Cormick." This work further states concerning Bell's reaper: "It is known also that *four* of the machines were sent to the United States of America; and this circumstance renders it highly probable that they became the models from which the so-called inventions of the American reapers have since sprung."

The article in the 'Transactions' in 1865 comes to somewhat similar conclusions, but mentions certain other machines, in addition to those noticed in 'The Book of Farm Imple-

¹ 'Book of Farm Implements and Machines,' by James Slight and R. Scott Burn, edited by Henry Stephens (William Blackwood & Sons, 1858), pp. 342 to 359.

² 'Reaping Machines.' By Jacob Wilson, M.R.A.C. Transactions of the Highland and Agricultural Society of Scotland, Third Series, vol. xi., pp. 123 to 149.

ments and Machines,' as deserving special attention. For instance, certain of the earlier machines which appeared before Bell's machine had cutters which worked with a reciprocating motion applied to a toothed knife which worked between fixed teeth or projections. Such an arrangement somewhat resembles the cutters of the present day, and also resembles in certain respects the shears used by Bell in his machines. Among earlier machines of this kind a number were made by a group of inventors in Northumberland. One of these was made by Mr John Common of Denwick, who appears to have used it with success on his own crop, and another was made by a schoolmaster, Mr Henry Ogle of Rennington, who worked in collaboration with an Alnwick firm, Messrs Brown & Wilson. Jacob Wilson, however, like other writers of the period, comes to the conclusion that "by far the most perfect machine of this period was invented by the Reverend Patrick Bell of Carmyllie."

It seems evident that the public were not ready for reaping machines in Britain in the first half of the nineteenth century, otherwise it is difficult to understand why such promising inventions as those of Smith, Mann, Common, Ogle, Bell, and others were not followed up and manufactured on the large scale by implement makers and adopted by the agricultural public. These machines among them already embodied, though perhaps in a somewhat crude and imperfect form, most of the leading principles which were afterwards adopted in modern reaping machines. Jacob Wilson stated in his paper in 1865: "Up to this time (*i.e.*, 1850) little interest had been taken by the public in the matter of reaping machines, from the fact that neither the requirements of the farmer nor the prospect of pecuniary reward to the agricultural implement makers were of such a nature as to promote the development into a practical form of what were really—as in the case of Bell's and Smith's—valuable inventions."

Bell himself in his article in the 'Journal of Agriculture' in 1854 gives a somewhat similar opinion. He says of his own machine, "like a child prematurely born, it came into the world before the agricultural community were ready to welcome it."

A study of the contemporary literature leads one to the conclusion that no one man invented the reaping machine, but, as is the case with so many other great inventions, the minds of many ingenious improvers were engaged upon this problem, and quite a number of different machines arose independently, several of which embodied valuable ideas which were ultimately adopted in the machines which came into general use. No one who reads the literature with an unbiassed mind could fail to come to the conclusion that all the leading principles which were ultimately adopted in reaping machines had already been embodied on one or more

of the pioneer machines before 1830. Those writers who summarised the position in or shortly after the middle of last century, when the reaping machine was at last becoming established in popular favour, are generally in agreement that the outstanding pioneer machine was that of Patrick Bell, and that it was the only one of the machines made before 1830 which continued to be used until reaping machines became established after the great Exhibition of 1851. After this Exhibition it was taken up by an English manufacturer, Croskill of Beverley, Yorkshire, who made certain improvements on it, and placed it upon the market as the Croskill-Bell machine. It is important in this centenary year of the invention of Bell's machine that these facts should be properly realised. Certain American makers, and in particular the firm of M'Cormick in Chicago, which is now a part of the International Harvester Company, have claimed the reaping machine as an American invention. They have done this so loudly and persistently that even some British writers, who should have known better, have accepted Cyrus M'Cormick as the inventor of the reaping machine. For instance, William Macdonald, in his 'Makers of Modern Agriculture,'¹ treats Cyrus M'Cormick as the undoubted inventor of the reaping machine, and does not even mention Bell or any of the earlier British makers of such machines.

Cyrus M'Cormick was born in 1809. His father, who was a farmer in Virginia, tried to make a reaping machine, which proved a failure. Young Cyrus was therefore early interested in this subject, and he appears to have made his first reaping machine in 1831. It was, however, a comparatively crude machine, and was considerably altered later. He took out his first patents in 1834, and further patents in 1845 and 1847, but it was a long time before he succeeded in selling a machine. It is said that his first machine was sold in 1840, and that in 1842 he succeeded in selling only seven machines. In 1847 he went to Chicago, and set up his works there. It was only after he moved to that city that his business began to grow and flourish, and that his reaping machines began to come into extensive use in America.

His claims to be the inventor of the reaping machine were disputed at the time in America itself, and there were legal proceedings as to the validity of his patents and of his claims as an inventor. Nevertheless, his firm continues to claim him as the inventor of the reaping machine, though the earliest date they can place upon his invention is the year 1831, in which year the first M'Cormick machine cut its first harvest. As has already been pointed out, Bell's machine had already cut three harvests before that time, and many

¹ Macmillan & Co., London, 1913.

of his machines made by local tradesmen were already in use; not only so, but it is known that some of them had already been taken across the Atlantic. All these facts, however, might easily have escaped the attention of M'Cormick, for a century ago the United States was a very far away as well as a very large country. There is no excuse, however, for one who was interested in reaping machines and in the advance of agricultural machinery not being acquainted with what was published in such a widely known journal as the 'Quarterly Journal of Agriculture.' As has been shown above, Bell's machine was fully described and figured in that widely circulated journal in 1828, and was mentioned in later parts of the journal. Another work which was well known as a leading work on agriculture at that period was Loudon's 'Encyclopædia,' and here also Bell's machine was fully described and figured. When the present writer was in Chicago last summer he visited the M'Cormick Works in Chicago, and saw their very interesting museum, which includes some of the earlier models of M'Cormick's machine; none of these, however, is dated before 1840. Some discussion took place about Bell's machine and its priority to M'Cormick's. The advocates of M'Cormick's priority made a strong point of the fact that Bell had never patented anything. Bell himself has supplied the reasons why he did not patent his machine.

In his article in the 'Journal of Agriculture' in January 1854, Bell states that after the success of his machine in 1828 and 1829 quite a number of machines were made in different parts of the country by "mechanics of various kinds, common wrights, blacksmiths, and millwrights. . . . Some of them followed my pattern, which was quite accessible to them, and some introduced alterations. . . . Out of some twelve or eighteen machines made by such parties about this time, I am not sure that any one of them continued to work above a few years." He states that this was owing to the "ignorance and incompetency" of those who made them and to bad workmanship; and he continues: "Had I patented the machine at the time, all this bungling in machine-making would have been avoided; and the issue perhaps proves that, for the public benefit even, this was the prudent course to have been adopted. But I was always averse to this step being taken. I wished the implement to go into the agricultural world free of any extra expense. In proof of the public spirit of the late Lord Panmure, I may mention that his Lordship, knowing the low state of my finances, offered to be at the expense of a patent if I would accept one. For the reasons above stated, I respectfully declined his Lordship's offer." In a footnote Bell gives the names of the tradesmen who made his own machines, and also records what he did with the premium of £50 granted to him by the Highland Society in 1828. The

Rev. Dr Cannan, who had witnessed some of his earliest experiments in 1828, was so pleased with them that he had a machine made in Dundee from the original machine, which was sent as a model. Although it was a handsomer-looking machine than Bell's original, from which it was copied, it was made in a hurry, and turned out of little value, although the price charged for it was £84. This machine was exhibited before the Highland Society at Glasgow, and Bell paid over his premium of £50 to Dr Cannan to assist in paying for it. He adds : " I was out of pocket £10 in conveying the machine to and from Glasgow, exclusive of my own personal expenses ; so that in 1828-29 my mechanics cost me some £25—a very serious sum to me at that time, not one single penny of which has been recovered, but which was amply compensated by the pleasure I enjoyed in prosecuting the invention, and in making the first experiments with the reaper."

It will be seen that Bell's reasons for not patenting his invention were of the highest and most honourable kind. He was a farmer's son, who had himself worked in the fields at harvest, and knew the severe nature of the toil to which harvest workers were subjected. He wished to present his invention freely to the agricultural public, and not to add to its cost by any royalties or profits accruing to himself.

One of the quotations given above shows that later he himself recognised that his high and honourable motives in not patenting the machine and having it manufactured by licence by definite firms who would follow exactly his own instructions were probably mistaken, and did not promote the use of his machine but the contrary. So many of the early machines were made too weak in one part or another that they broke down, and gave the impression that Bell's machine, like so many others, was a failure. If it had been made under his own instructions it would probably have been like his own original machine, which continued to work on his father's, and afterwards on his brother's farm for many years. As he gave his ideas freely to the public, anybody was at liberty to make a machine after his design and to modify it in detail as he chose ; the result was that the machines made by different people were not uniform, and were generally defective in some part or other.

In addition to the prejudice created by the construction of defective machines, there were other reasons why Bell's machine was not taken up generally and why reaping machines did not come into general use till more than twenty years later. Labour in Britain was still cheap, and in spite of the growth of commerce and industry agricultural labour was still comparatively plentiful. Great prejudice against machines still existed amongst labourers, and the view was very generally held until much later that the use of machines was to be

discouraged because they displaced labour. No manufacturer of agricultural machinery appears to have taken up Bell's machine, although it was quite open to him to have done so, until after 1850. One would almost have expected that manufacturers would have been ready to jump at the opportunity of placing upon the market and pushing such a promising machine. The explanation probably lies in the fact that at the period in question the attention of manufacturers in this country was absorbed by the great developments which were taking place in commerce and in industry and in means of communication, and that agricultural improvements had at this time comparatively little interest for them.

Even in America, where labour was much scarcer and dearer and where agriculture occupied a much more important and prominent position than in this country, the reaping machine at first made very slow progress. As has already been mentioned, M'Cormick had to struggle for many years before he succeeded in selling any of his machines, and it was not till the late 'forties that reaping machines began to come into extended use in America. In this country it was the 1851 Exhibition which brought them to the serious notice of the public, and there is no doubt that it was the advent of American machines, such as those of M'Cormick and Hussey, at that Exhibition that caused the British public to begin to take an interest in them. By that time the American machines had been in use on a considerable scale for several years, and had been gradually improved. It is a remarkable tribute to Bell's machine that it was able at once to enter into competition with these American machines.

As soon as reapers began to become popular in this country Bell's machine was taken up, and with some slight improvements in detail manufactured by Croskill of Beverley. It then entered into competition with the American machines, and was able to win many prizes and commendations in competition with all-comers in the various public competitions for reaping machines which took place in Scotland and England.

In his paper in the 'Journal of Agriculture' in 1854 Bell gives his own account of the various steps by which he arrived at and tested the main parts of his invention. His narrative is most interesting, and is written in a simple, natural, and sincere style, not without touches of humour. He relates that he had already carefully studied a plate figuring the machine of Mr Smith of Deanston, and that he thought much of the matter for years, and diligently searched for some principle which would accomplish the object in view till it became a kind of obsession with him. One evening his eye caught sight of a pair of gardener's shears sticking in a hedge; he jumped to the conclusion here was the principle he wanted, seized the shears, crept through the hedge, and began trying them on

green oats. "It was well," he adds, "no neighbouring gossip saw me, else the rumour might have been easily circulated that the poor student had gone crazed." He worked at this idea for a long time, and in 1827 made a model. He then made full-sized wooden models of the metal parts, after considering carefully in model many questions of size and strength, and had these made by the local blacksmith, and thus laboriously built up the machine with his own hands. The work done by the smith he finished with the file, and the cutters in particular gave him "a world of trouble and vexation. When they came into my hand they were in a very rude state, and required much grinding, filing, and fitting."

When the first rude machine was got together he tried it in the outhouse which formed his workshop. For this purpose he covered the floor with 6 inches of earth, which he stealthily conveyed to the shed, and got a sheaf of oats from a stack, and planted it stalk by stalk in the earth. When he tried his machine upon this artificial crop it cut well enough, but the cut corn "was lying higgledy-piggledy, in such a mess as would have utterly disgraced me in the harvest field." Encouraged that his machine would at any rate cut, he set to work again to arrange for rollers and a travelling canvas to deliver the corn in an orderly way at the side. After many trials and disappointments he worked out the way of doing this also, and again dabbled in an artificial crop, and applied his contrivance to it. It now cut and delivered the corn to his satisfaction. He records that he congratulated himself audibly on his success, "being convinced that I had converted the implement from a cutting to a reaping machine."

During the process of his experiments he also devised a reel or collector, to divide the standing corn as the machine advanced into it, and hold it in an orderly way for the shears to cut. All this was completed during the summer of 1828 before the crop was ripe, and he had now to wait impatiently for a field trial.

This trial was made by his brother and himself in secret, late at night, when everybody was gone to bed. They could not wait till the crop was quite ripe, but wanted to find whether the machine would work, so "the good horse Jock was yoked to it," and they slipped away at 11 o'clock at night to a field of ripening wheat, "my brother and I speaking the meantime to one another in whispers." At first they were very disappointed with the result, for while "the wheat was well enough cut it was lying in a bundle before the machine." They found, however, that the reason was that in their haste to get the trial made they had forgotten to put on the reel, so the reel was hurriedly fetched and put in position in the dark. They now found the machine worked quite satisfactorily, and "the wheat was lying by the side of the machine as prettily as any that has ever been cut by

it since." So they congratulated themselves, and took the machine back as quietly as possible to its quarters to await a triumphant public trial.

The four main features of Bell's machine were (1) the cutting arrangement—namely, the shears; (2) the moving canvas for receiving the cut crop and delivering it at the side of the machine; (3) the reel or collector for holding the crop ready to be cut; and (4) the arrangement by which the horses were yoked behind the machine and drove it in front of them. The first three features have been referred to already, and all of them have been adopted with modifications and improvements in modern reaping machines. In fact, Bell's machine, except in the matter of the method of propulsion, embodied all the chief features of a modern reaping machine. Instead of a set of shears all jointed to a rod, which caused all the moving blades to work backwards and forwards at the same time, the shears of the modern machine are made by a deeply toothed bar which works backwards and forwards, but the principle is the same, and is now universally adopted.

The method of driving Bell's machine in front of the horses was at one time considered one of its principal advantages, for the machine could cut the crop without a way being opened for it by the scythe round the sides of the field. The horses followed in the track of the corn which had just been cut, but which was delivered to the side by the canvas so that they did not tread upon it. This feature, however, has not been adopted in modern machines, all of which are drawn behind the horses and cut to the side of the track on which the horses are walking. Even in the trials which were made with Bell's machine after 1851 the fact that it was pushed from behind and did not require a way to be cut for it was held to be one of its advantages.

Great fortunes have been made out of reaping machines on both sides of the Atlantic, and the reaping machine is now the almost universal method of cutting crops in civilised countries. The present seems to be a suitable occasion to honour those early workers who did good pioneer service in inventing this machine and made little or no profit by it. 1928 is the centenary of Bell's machine, which was the most notable of these early machines. Is it too much to expect that the agricultural implement industry, and especially those great firms on both sides of the Atlantic who make reaping machinery, should do something to commemorate this notable centenary?

Note.—At the General Meeting of the Highland and Agricultural Society, on 15th January 1868, the Marquis of Tweeddale in the chair, a presentation of a piece of plate and £1000 was made to Dr Bell "by a large number of his countrymen in token of their appreciation of his pre-eminent services as the inventor of the first efficient reaping machine."

FOURTEEN YEARS' SUCCESSFUL POULTRY FARMING.

By ARTHUR G. RUSTON, B.A., D.Sc., and C. V. DAWK, M.Com.,
The University of Leeds.

INTRODUCTION.

DURING the last eight or nine years a great deal of attention has been devoted in the Economics Section of the Department of Agriculture of the University of Leeds to the economic position of farming in the county. These records have, of late, been far from pleasant reading, for they go to show that not once in the last six years has the average farm left a return equivalent to what might have been obtained by the investment of the farm capital in trustee stock.

It is, however, interesting to find that, during the whole of this period of agricultural depression, there has been one branch—poultry keeping—which has been able uniformly to pay its way, and that in spite of the fact that this branch is the one which probably gets the least attention and consideration on the farm.

From time immemorial the general farmer has made a practice of keeping a certain number of fowls—frequently of a nondescript type—about the buildings; but unfortunately there has been, up to quite recently, little done on the great majority of mixed farms to raise the standard of poultry production, or to extract the maximum profit from what may be described as potentially the most profitable class of live stock on the farm to-day.

Too few fowls are still being kept. The latest available returns show that the depletion of poultry stock during the war period has been little more than made good; the number of birds in the country to-day stands at 118 per 100 acres of cultivated land as compared with 200 birds to the same area in Denmark.

Too little personal attention is still being given to their feeding, equipment, and management; on far too many farms they are still looked upon as a matter of little importance, except perhaps as a convenient source of pin-money to the womenfolk.

The wonder to us is that, under these conditions, the birds should still have left in

1919-20	an average surplus of 17s. 6d. per bird.
1920-21	" " 14s. 2d. "
1921-22	" " 9s. 9d. "
1922-23	" " 3s. "
1923-24	" " 3s. 10d. "
1924-25	" " 4s. 6d. "
1925-26	" " 4s. 8d. "
1926-27	" " 3s. 8d. "

Actually it would appear as if this were the one branch of the farming industry which during this period has been practically fool-proof, and capable of leaving a balance on the right side however much neglected.

To the poultry specialist, possibly with trap-nested birds, it may come as a surprise to find that the normal nondescript farm fowl, while laying on the average only 3 eggs per fortnight, should still have left a profit.

It must, however, be remembered that on the farm the birds are kept cheaply; to a certain extent they pick up their own living; the capital outlay on equipment and housing is almost negligible; while the labour bill in attendance to them is absurdly low.

The cardinal importance of poultry on the farm cannot be too strongly emphasised, particularly at a time like the present, when the farming industry is needing money badly, and we are spending no less than £22 millions a year on the importation of egg and poultry products. If further evidence were needed as to the economic value of poultry on the farm it is provided in the recently published figures of the Ministry of Agriculture, which show that the estimated value of eggs and poultry produced for sale in this country amounted in 1925 to

in 1925 to	£15,080,000
that of wheat to	12,070,000
" potatoes to	11,830,000
" barley to	7,380,000
" oats to	3,190,000

yet there are plenty of men who would call themselves farmers if specialising in barley growing, who would hardly consider themselves such if specialising mainly in egg production.

Under these circumstances it was thought that it might be of interest to place before your readers a summary of the fourteen years' consecutive poultry records kept on a farm which has been concentrating largely in this direction. These records have been kept with extreme care and accuracy, and we are highly favoured in having them placed unreservedly at our disposal.

THE GROWTH OF THE BUSINESS.

Poultry keeping in this case commenced in a small way in 1913 with 12 laying birds—White Leghorns—purchased in April of that year at 3s. 6d. each. In addition an old hut was taken over at a value of £5. This total outlay of £2 2s. for birds and £5 for equipment laid the foundations of the present flock which, as can be seen from the accompanying trading account, left in 1926 a net profit of £667.

FARM B. V. H.

POULTRY TRADING ACCOUNT

for the year ended 31st December 1926.

<i>Valuation, 1/1/26.</i>	£	s.	d.	<i>Valuation, 31/12/26.</i>	£	s.	d.
36 W.W. cocks @ 7/6	13	10	0	50 W.W. stock cockerels @ 10/-	25	0	0
27 W.L. cocks @ 6/6	8	15	6	4 R.I.K. stock cockerels @ 15/-	3	0	0
463 W.W. pullets (1925) @ 7/6	173	12	6	43 W.L. stock cockerels @ 7/6	16	2	6
597 X pullets (1925) @ 7/6	223	17	6	138 table cockerels @ 3/-	20	14	0
240 breeders (1924) @ 4/6	54	0	0	1094 pullets (1926) @ 7/6	410	5	0
420 hens (1924) @ 4/-	84	0	0	898 hens (1925) @ 4/-	179	12	0
107 hens (1923) @ 2/6	13	7	6	210 hens (1924) @ 2/6	26	5	0
1 gander and 1 goose @ 12/-	1	4	0	1 goose and 1 gander @ 10/-	1	0	0
Food in stock	57	9	0	6 geese @ 10/-	3	0	0
				Food in stock	57	15	6
<i>Purchases.</i>				<i>Sales.</i>			
Stock birds	3	0	0	18 stock cockerels	10	3	0
Incubator eggs	124	7	0	12 pullets	6	6	0
Food	796	11	11	254 hens	28	2	11
Labour (2 men and 1 boy)	266	18	0	899 cocks	125	0	11
General expenses	82	5	2	19 goslings	6	14	6
Carriage	23	4	7				
Depreciation of equipment	70	9	2	<i>Eggs sold.</i>	£	s.	d.
				Jan. 19,090	98	4	9
				Feb. 15,611	127	13	0
				March 28,793	151	11	7
				April 29,207	198	18	1
				May 24,578	131	2	10
				June 20,226	104	4	8
				July 15,006	90	5	3
				Aug. 20,992	158	0	2
				Sept. 19,383	158	9	11
				Oct. 15,938	120	5	7
				Nov. 14,444	175		5
				Dec. 17,903	171	4	6
Profit	667	10	3	241,171		1745	0 9
	2664	2	1			2664	2 1

It will be seen that in the accounts the birds have apparently not been credited with any manure, nor have they been debited with the rent and rates and other costs of the seven

METHOD OF FINANCING IT.

It will be seen that during the fourteen years under consideration the net profits have amounted to £4124 16s. 7d., that the live stock have increased in value from £2 2s.

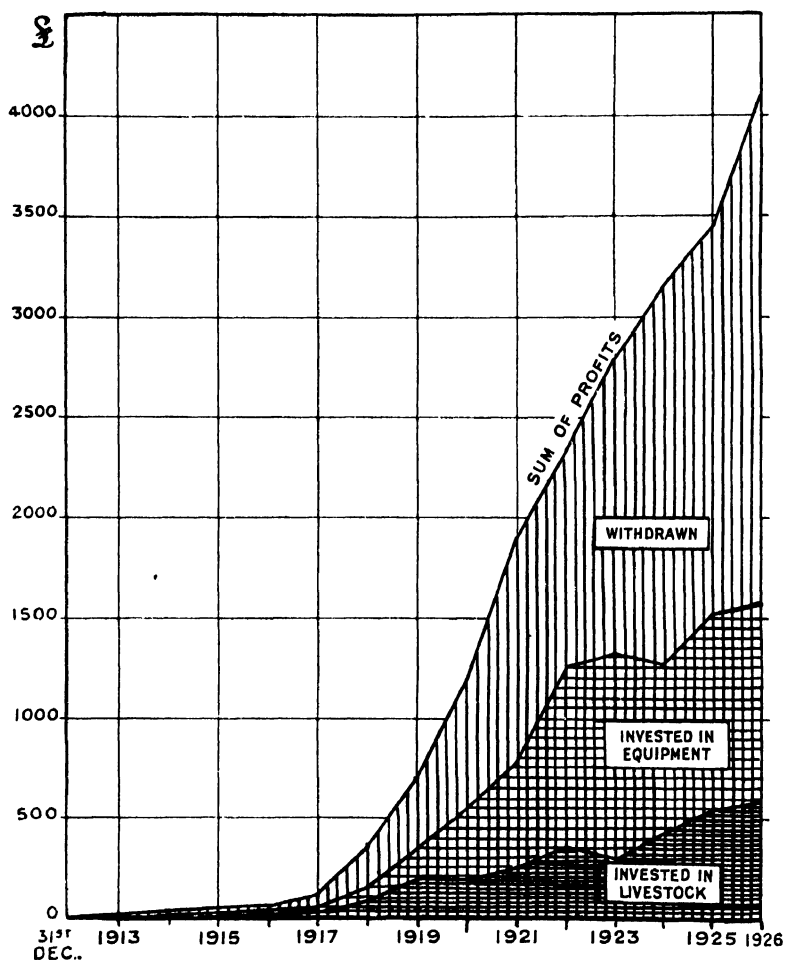


Fig. 3.—*Sum of Profits and their Utilisation.*

to £572 7s., and the equipment from £5 to £970 9s. 2d. Out of the total profits received, therefore, £1535, or approximately three-eighths, have been reinvested, leaving £2590 either to meet household and personal expenditure or for investment outside the holding. In other words, after having

reinvested nearly one-half of the net profits, there has remained during fourteen years an average net income of £185 per annum, or £3, 11s. per week.

A glance at the graph on the previous page will show that up to the end of 1922 the building up of the stock and equipment was absorbing a very large proportion of the net profits, and that it has only been during the more recent years that the full benefit has been received and the soundness of the policy really justified. By the end of 1916, after four years' working, out of £55 total net profit which had been made, £32 had been left in the business, leaving only £23, or an average of £5, 15s. per annum, to be withdrawn. By the end of 1918, after six years working, of a total profit of £350, which had been made during this period, £140 was left in and £210 withdrawn, while the withdrawals by the end of 1922 and 1926 had amounted to £1085 and £2590 respectively.

POLICY ADOPTED IN BUILDING UP THE FLOCK.

The flock, as has been already mentioned, began with 12 hens, followed shortly by a purchase of 10 table cockerels. Since the first year the only live stock purchased have been :—

1915—	1 cockerel.
1916—	2 cockerels.
1918—	4 stock birds.
1919—	15 „
1920—	64 pullets.
	16 table cockerels.
1922—	2 stock cockerels.
1924—	20 stock birds.
1925—	20 „
1926—	6 „
Total	150

A few of the eggs required for incubation purposes have very occasionally been purchased from reliable sources, but with this small exception, the eggs incubated have been produced on the holding.

The usual practice is to keep the laying birds for two years and then to fatten them for sale. The following table has been compiled from the accounts to illustrate this method :—

Year.	AVERAGE NUMBER OF LAYING BIRDS			
	Under 1 year.	1-2 years.	2-3 years.	Total.
1913	—	12	—	12
1914	—	—	11	11
1915	—	12	—	12
1916	59	—	9	68
1917	51	31	—	82
1918	175	50	12	237
1919	289	136	—	425
1920	284	215	—	499
1921	520	159	—	679
1922	627	429	—	1056
1923	466	593	—	1059
1924	692	302	117	1111
1925	927	482	66	1475
1926	1060	660	107	1827
1927	1094	898	210	2202

Of the 12 one-year-old birds purchased in 1912, 11 were left in the following year. By the beginning of 1916 there were 59 pullets and 9 three-year-old birds, the latter having been retained from the 12 two-year-olds of the previous year. From 1916 to 1923 no birds have been kept beyond two years, with the exception of 12 in the beginning of 1918.

During the last few years, however, a considerable number of three-year-old birds have been retained. This has been due partly to the fact that the equipment had been growing more rapidly than the number of birds, but chiefly because a consistent policy is now being followed. This, in short, is to ascertain, by trap-nesting, the egg yield of individual birds, and to retain only those giving the highest yield. In the last four years, therefore, two-year-old birds are kept for another year if their egg yield warrants it, and only those pullets which have a high yield are retained for a second year.

In 1924 and 1925, for example, only about two-thirds of the pullets were retained for a second year. By this method the standard of the flock from the standpoint of egg production is continually rising.

CAPITAL INVESTED IN LIVE AND DEAD STOCK.

It will be seen that, at the end of 1926, approximately 37 per cent of the working capital was invested in live stock, which should be growing into money, and 63 per cent in dead stock and equipment, which is depreciating and falling in value; a ratio which, in any other branch of the farming

industry other than specialised poultry keeping, would be one to be regretted. If, however, poultry have to be kept on a large scale they must be housed and properly equipped, and the keynote in this case, as far as we have been able to see, has been efficiency with economy. One finds the housing ample in point of cubic capacity and floor space, while containing fittings of the simplest possible construction.

When it is realised that, in spite of the apparent heavy investment in equipment, it corresponds now only to 8s. 9d. per laying bird, it will be seen that there is nothing radically wrong in this direction, particularly now that the house and equipment leave nothing to be desired.

OUTPUT OR PRODUCTION.

The first essential of success in any business, whether agricultural or otherwise, is output or production. Unless this be high no great and outstanding success can ever be obtained, however low the production costs. Again, the output must grow, for no business can ever stand still; if it does not go forward the odds are that the trend will be in the opposite direction.

SALES.

That the farm has not been standing still so far as sales are concerned can be seen from a glance at the following table, which shows that the gross sales have increased from £7 19s. 8d. in 1913, to £1921 8s. 1d. in 1926.

GROSS SALES.

Year.	Poultry.	Eggs.	Total.	Per laying bird.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1913	1 12 0	6 7 8	7 19 8	0 13 4
1914	5 9 6	10 1 0	15 10 6	1 8 3
1915	20 13 0	46 13 10	67 6 10	1 12 3
1916	26 5 11	78 5 7	104 11 6	1 10 9
1917	29 6 7	114 7 7	143 14 2	1 15 0
1918	119 3 3	421 19 8	541 2 11	2 5 8
1919	183 6 6	795 17 7	979 4 1	2 6 1
1920	264 18 7	970 13 8	1,235 12 3	2 9 6
1921	241 6 7	1,428 11 2	1,669 17 9	2 9 2
1922	161 0 10	1,239 5 11	1,400 6 9	1 6 8
1923	275 7 2	1,226 0 0	1,501 7 2	1 8 4
1924	247 19 8	1,378 7 5	1,626 7 1	1 9 3
1925	232 0 4	1,539 10 7	1,771 10 11	1 4 0
1926	176 7 4	1,745 0 9	1,921 8 1	1 1 0
TOTAL	1984 17 3	11,001 2 5	12,985 19 8	1 10 4 Average.

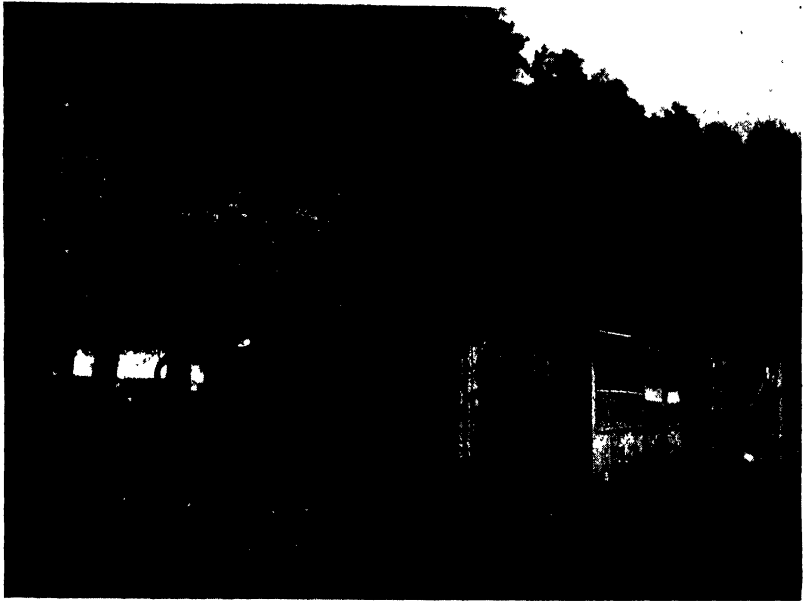


Fig. 4.—*One of the Early Houses.*



Fig. 5.—*The present Breeding Pens.*

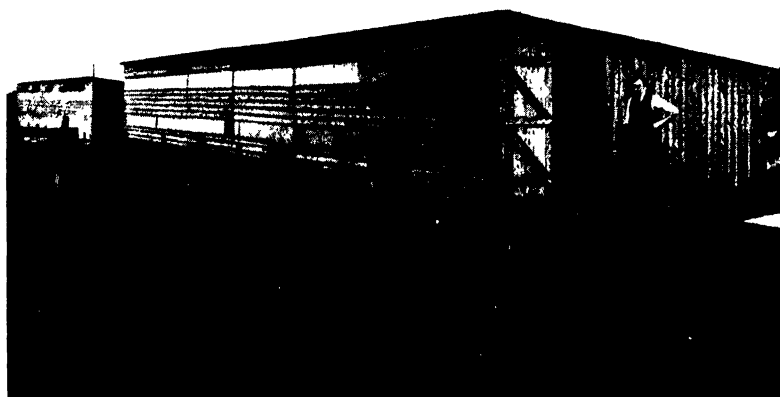


Fig. 6.—*A large Laying House.*



Fig. 7.—*A view of the latest additions.*

It will be seen that the sales per laying bird were greatest during the four years immediately following the war.

In all sections in agriculture a boom was experienced, but one which was followed by a sharp and disastrous slump. In the poultry industry, largely owing to the falling out of Russia from the export trade, this boom was continued well into the period of general agricultural depression, as our home production of eggs had not regained its pre-war standard, since a large number of birds had been killed off during the war period on account of the difficulty of obtaining the necessary foodstuffs.

The number of fowls in England and Wales in 1921 was estimated by the Ministry of Agriculture at 24,816,000, as compared with 29,026,000 in 1913, a deficiency of more than 14 per cent. In addition to this, largely owing to the falling out of Russia, the import of eggs, which, in 1913, amounted to 57 per head of the population, had fallen in 1918 to 7, and by 1921 had again reached only 26 per head. It is a striking fact that while the money value of 21,579,950 great hundreds of eggs imported in 1913 amounted to £9,590,602, the 10,557,504 great hundreds imported in 1921 were brought into the country at a cost of £11,395,828. It was imperative, therefore, that the man who wanted to make money in poultry keeping should get into the business and rapidly increase his stock as soon as possible after the cessation of hostilities. On this holding a big attempt was undoubtedly made in this direction.

OUTPUT.

Further, it will be noticed that of the grand total of sales in the final year—given on page 77—£1745, 0s. 9d. represented the sale of eggs and £176, 7s. 4d. the sale of poultry, a ratio of approximately ten to one. While the sale of eggs undoubtedly gives a very close estimate of the production of eggs, the same can scarcely be said with reference to the sales of poultry, for not only have poultry been sold, but the flock has increased from the 12 birds bought in April 1913 for £2, 2s., until on the 31st December 1926 it consisted of 2202 laying birds, with the proportionate number of stock and table birds of a total value of £572, 7s. The account given on page 72 will show the reader that the flock is now almost entirely composed of a "heavy" breed. The White Leghorns have been gradually discarded, with the result that only a few of these are now being kept.

The output or production of poultry, therefore, will consist not only of the sale of poultry, but of their increased valuation.

OUTPUT OR PRODUCTION.

Year.	TOTAL.			PER BIRD.			YORKSHIRE FARMS PER BIRD.		
	Poultry.	Eggs.	Total.	Poultry.	Eggs.	Total.	Poultry.	Eggs.	Total.
1913	£ s. d. 0 1 6	£ s. d. 6 7 8	£ s. d. 6 9 2	£ s. d. 0 0 1½	£ s. d. 0 10 8	£ s. d. 0 10 9½	£ s. d. —	£ s. d. —	£ s. d. —
1914	2 0 3	10 1 0	12 1 3	0 3 8	0 18 3	1 1 11	—	—	—
1915	29 16 0	46 13 10	76 9 10	0 9 8	0 17 10	1 7 6	—	—	—
1916	17 13 11	78 5 7	95 19 6	0 5 2	1 3 0	1 8 2	—	—	—
1917	94 16 1	114 7 7	209 3 8	1 3 1	1 7 11	2 11 0	—	—	—
1918	159 12 10	421 19 8	581 12 6	0 13 6	1 15 7	2 9 1	—	—	—
1919	146 9 0	795 17 7	942 6 7	0 6 11	1 17 5	2 4 4	—	—	—
1920	203 11 2	1,020 13 8	1,224 4 10	0 8 2	2 0 11	2 9 1	0 2 0	1 8 0	1 10 0
1921	262 16 1	1,428 11 2	1,691 7 3	0 7 9	2 2 0	2 9 9	0 3 6	0 19 11	1 3 5
1922	42 17 10	1,239 5 11	1,282 3 9	0 0 10	1 3 6	1 4 4	0 2 6	0 13 4	0 15 10
1923	289 10 5	1,226 0 0	1,515 10 5	0 5 6	1 3 2	1 8 8	0 2 6	0 10 10	0 13 4
1924	195 5 8	1,378 7 5	1,573 13 1	0 3 6	1 4 10	1 8 4	0 3 1½	0 11 9	0 14 10½
1925	130 12 6	1,539 10 7	1,670 3 1	0 1 9	1 0 10	1 2 7	0 2 6	0 13 1	0 15 7
1926	161 11 10	1,745 0 9	1,906 12 7	0 1 9	0 19 1	1 0 10	0 2 9	0 13 9	0 16 6
	1736 15 1	11,051 2 5	12,787 17 6						
		Average .	. . .	0 4 0	1 5 10	1 9 10			

During the fourteen years under review the total value of the

Poultry produced for sale was	£1,736	15	1
Eggs " "	11,051	2	5

Giving a total gross output or production of £12,787 17 6

It will be seen that of this total gross output

86 per cent was in the form of eggs, and
14 " " " " poultry,

and further, that during the whole of the fourteen years there has been an average production of eggs and poultry to the value of just over £900 per year.

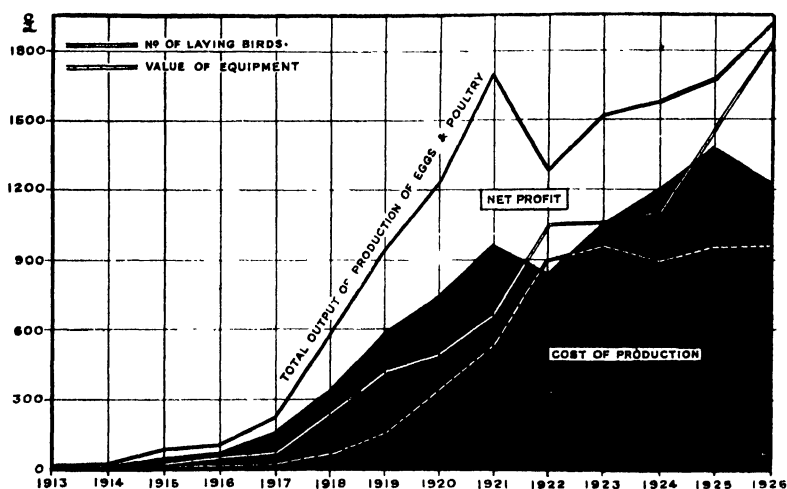


Fig. 8.—Total Output or Production.

In the table on page 81 the yearly variations in the total output, and the output per bird, are given. It will be seen that the highest total production was obtained in the last year under review, whereas the highest output per laying bird was obtained in the four years immediately after the war. This high output per laying bird during this period was most probably due to the high selling price of eggs at this time, owing to the shortage both of the home and imported supply.

Possibly it may be of interest to compare the output per laying bird obtained on the farm each year with that which we have found to obtain on the average of the whole of the farms whose accounts we have had under observation. It will be seen that on this specialised farm attention is being devoted mainly to egg production, and possibly of late years

not quite sufficient attention has been devoted to the production of table birds. On the other hand, as far as total production is concerned, very little fault can be found, as, during the seven years where a comparison was possible, the output per bird has been on the average 81 per cent above the normal. It will also be noticed that in spite of the present drop in prices of eggs and poultry products, the output per bird in this particular farm was, for the year ended 31st December 1926, more than 90 per cent higher than that obtained on the same holding in the year preceding the war.

PRODUCTION COSTS.

It has already been pointed out that the first essential of success is high production. On the other hand, it cannot be too strongly emphasised that high production, though essential to success, does not ensure it, and that high production must also be obtained at a low production cost if real success is to be achieved.

The growth of the total working costs, as the size of the flock increased, can be studied from the following table:—

PRODUCTION COSTS.									
Year.	Total.			Per bird.			Per dozen eggs.		
	£	s.	d.	£	s.	d.	£	s.	d.
1913	3	13	11	0	6	2	0	0	7
1914	7	5	5	0	13	5	0	1	3
1915	55	19	10	0	15	6	0	1	5
1916	68	13	7	1	0	2	0	1	7½
1917	162	10	1	1	19	8	0	3	8
1918	335	11	3	1	8	4	0	3	3
1919	583	5	8	1	7	5	0	2	11½
1920	742	18	1	1	9	9	0	3	1½
1921	968	12	7	1	8	6	0	2	2½
1922	855	6	5	0	16	2	0	1	6
1923	1048	16	9	0	19	10	0	1	10½
1924	1207	6	3	1	1	9	0	1	10½
1925	1383	18	10	0	18	9	0	1	11
1926	1239	2	4	0	13	7	0	1	2½
Total	8663	1	0						
Average				1	0	3	0	1	11

the details of which are brought out more strongly in the accompanying graph (page 84), which shows not only the total, but the constituent items of expenditure. The high propor-

tion of these production costs absorbed by foodstuffs is very noticeable.

Perhaps the most striking aspect of the graph is the way in which control over the other items of cost has been maintained.

With the increase in the output, productive expenditure, in the purchase of raw materials in the form of foodstuffs, has increased proportionately, while with increased production the overhead charges have tended to absorb a smaller proportion of the output.

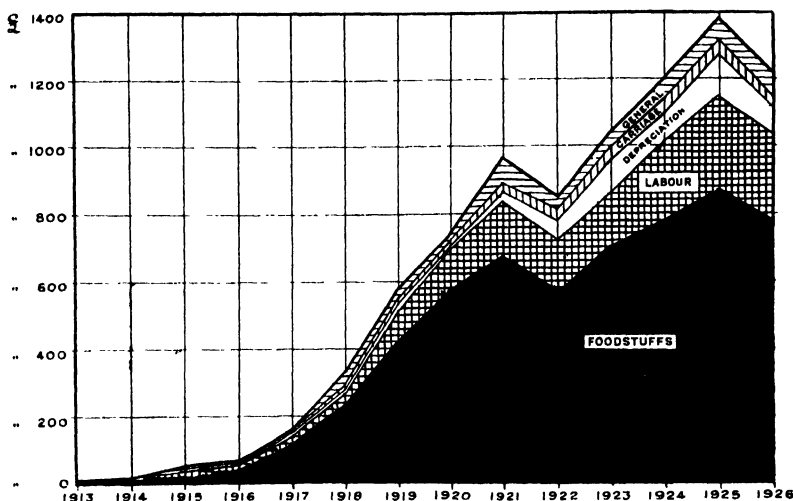


Fig. 9.—Total Costs of Production.

Over the period of fourteen years the	
Food bill has absorbed .	46% of the output,
Labour bill has absorbed .	13% "
Overhead charges has absorbed	8% " and the

Total production costs	. 67%
------------------------	-------

leaving a margin of 33 per cent profit.

During the early stages of the war, when prices of foodstuffs were rising and the selling price of eggs and poultry was controlled, the food bill was absorbing proportions varying from 56 to 66 per cent of the total output.

Immediately following the war when, with the opening of the ports, supplies again became plentiful and the prices of foodstuffs fell rapidly, while the selling price of eggs rose in the opposite direction, the proportion of the output utilised in the purchase of foodstuffs fell as low as 38 per cent. During the remaining years the ratio has remained remarkably constant. As far as the labour bill is concerned

up to 1924, this again had remained very constant, at a figure varying from 10 to 11 per cent of the output.

In 1924 the size of the flock was becoming unwieldy for the staff employed, and an additional hand had to be employed.

On the other hand, it was not until two years later that the size of the flock had been increased to a sufficient extent to justify this additional employment. During these years the proportion of the output absorbed by the labour bill rose from 11 to 17 per cent. In a period of steady growth the transitional points want watching very carefully. By the end of 1926, with a further increased number of birds and the same labour, the disproportion had been put right, and the proportion of the output needed to pay the labour bill was again standing at the normal.

Expressing the expenditure under the various heads as a percentage, not of the output but of the *total expenditure* throughout the fourteen years, the

Food bill has been responsible for	67·8 %
Labour	18·5 %
Depreciation of equipment	5·5 %
General expenses	5·5 %
and Carriage	2·7 % of the total.

COST OF UPKEEP PER BIRD.

While total costs have naturally risen steeply with the growth of the flock, and while, had times been normal throughout the whole period, one might have expected the cost per laying bird to come down as the size of the flock increased, one finds that, owing to the influence of the war, the cost per laying bird rose sharply until 1917, seemed to hang at this high figure until 1920, when it actually reached its maximum, and since then has fallen steadily, though still standing at least 50 per cent above the 1913 figure. The following comparison (page 86) between the varying costs of upkeep per laying bird each year on this holding, as compared with what we have found to obtain on the average of the whole of the farms under investigation, should be of interest.

It will be seen that the cost of upkeep on this well-equipped and well-managed holding, on which the birds are being well-fed, well-housed, and well-cared for, has been each year well in excess of that which we have found to obtain on the ordinary farm. What really matters, however, is not output or production, not even production costs, but the margin between the two. If, on this holding, more money is being spent on the better feeding, the better housing of the birds, and in giving them more and better attention, and if this additional expenditure is really productive expenditure, resulting in a higher output and higher egg production, this apparently heavy expenditure may really prove a blessing in disguise.

Year.	FARM B. V. H. YEARLY COST PER LAYING BIRD.				AVERAGE OF ALL FARMS. YEARLY COST PER LAYING BIRD.			
	Food Bill.	Standing Charges.	Labour.	Total.	Food Bill.	Standing Charges.	Labour.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1913	0 5 1	—	0 1 1	0 6 2	—	—	—	—
1914	0 8 6	0 3 1	0 1 10	0 13 5	—	—	—	—
1915	0 11 6	0 3 8	0 0 4	0 15 6	—	—	—	—
1916	0 14 10	0 4 11	0 0 5	1 0 2	—	—	—	—
1917	1 11 8	0 5 6	0 2 6	1 19 8	—	—	—	—
1918	1 1 9	0 4 4	0 2 3	1 8 4	—	—	—	—
1919	1 3 4	0 1 11	0 2 2	1 7 5	—	—	—	—
1920	1 3 9	0 1 8	0 4 4	1 9 9	0 13 6	0 0 8	0 1 8	0 15 10
1921	1 0 3	0 3 2	0 5 1	1 8 6	0 10 9	0 0 9	0 1 6	0 13 0
1922	0 18 4	0 3 6	0 4 4	1 6 2	0 10 0	0 0 10	0 2 0	0 12 10
1923	0 14 2	0 2 6	0 3 2	0 19 10	0 7 2	0 0 10	0 1 6	0 9 6
1924	0 15 5	0 3 3	0 3 1	1 1 9	0 8 0	0 0 9	0 1 7½	0 10 4½
1925	0 13 0	0 3 2	0 2 7	0 18 9	0 9 7	0 1 3	0 1 10	0 12 8
1926	0 9 8	0 2 2	0 1 9	0 13 7	0 8 0	0 1 4	0 1 11	0 11 3

MARGIN OF PROFIT.

The difference between the value of the eggs and poultry which have been produced for sale—the yearly variations in which will be found on page 81,—and the cost of production of these—the yearly variations of which will be found on page 83,—will give us the margin of profit, a margin which has been uniformly high, not only when expressed as a percentage of the working capital invested but also as a total amount from year to year.

Year.	Total capital invested in Live Stock and Equipment.	Net Profit.	
		Total.	As % of cap. invested.
	£ s. d.	£ s. d.	%
1913	7 2 0	2 15 3	39
1914	6 7 6	4 15 10	75
1915	22 12 0	20 10 0	91
1916	39 1 10	27 5 11	70
1917	36 4 0	46 13 7	129
1918	149 17 5	246 1 4	164
1919	352 8 0	359 0 11	102
1920	533 3 7	481 6 9	90
1921	790 5 0	722 14 8	91
1922	1260 14 8	426 17 4	38
1923	1278 0 3	466 13 8	37
1924	1348 3 3	366 6 10	27
1925	1501 16 1	286 4 3	19
1926	1542 16 2	667 10 3	43

It will be seen that the highest returns were being obtained during the years 1917 to 1921, though the net financial returns can in no year be looked upon as in any way unsatisfactory. One doubts whether in any other branch of the farming industry, during the period through which we have been passing, equivalent returns could have been obtained on the money invested. These returns are all the more satisfactory when it is remembered that practically the whole of the capital at present invested in the holding has been built up out of accumulated profits, and that practically all the money which has been brought into the business from outside is represented by the first year's capital investment of only £7, 2s.

PROFITS PER LAYING BIRD.

The following details showing the profit per laying bird on this particular holding (B. V. H.), and also the average of the whole of the farms under investigation, is well worthy of consideration, for it will be seen that not only was the profit greatest during the years 1917 to 1921, when expressed as a percentage of the capital invested, but it will also be seen that the profits per laying bird were also highest during these years.

It is, however, interesting to note that the profit per laying bird was highest in 1922, a year which shows a comparatively small profit when expressed as a percentage of the capital

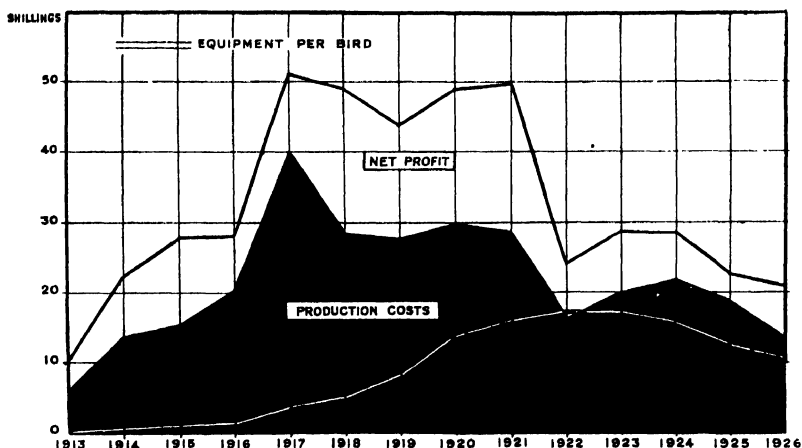


Fig. 10.—Gross Production—Production Costs and Margin of Profit per bird.

invested. This was a year during which heavy commitments were being made in the putting up of new houses and the buying of additional equipment, so that in this particular year the birds were having to carry a much heavier burden in the form of dead stock than usual. Still, the birds were laying well, eggs were fetching a good price, and the price of foodstuffs was not abnormally high.

It is further interesting to note that, in spite of the fact that the expenditure per bird on this farm has been high, and that the birds have been well-fed, well-housed, and money spent freely on labour in attention to them, this outlay has been productive expenditure, and has certainly justified itself by results, for the birds on this farm have left a far higher return per head than has been the case on the average farm.

PROFITS PER LAYING BIRD.

B. V. H.									AVERAGE OF ALL FARMS.									
Year.	Output of Eggs and Poultry.			Production Cost.			Margin of Profit.			Output of Eggs and Poultry.			Production Cost.			Margin of Profit.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1913	0	10	9½	0	6	2	0	4	7½	—	—	—	—	—	—	—	—	—
1914	1	1	11	0	13	5	0	8	6	—	—	—	—	—	—	—	—	—
1915	1	7	6	0	15	6	0	12	0	—	—	—	—	—	—	—	—	—
1916	1	8	2	1	0	2	0	8	0	—	—	—	—	—	—	—	—	—
1917	2	11	0	1	19	8	0	11	4	—	—	—	—	—	—	—	—	—
1918	2	9	1	1	8	4	1	0	9	—	—	—	—	—	—	—	—	—
1919	2	4	4	1	7	5	0	16	11	—	—	—	—	—	—	—	—	—
1920	2	9	1	1	9	9	0	19	4	1	10	0	0	15	10	0	14	2
1921	2	9	9	1	8	6	1	1	3	1	3	5	0	13	8	0	9	9
1922	2	9	9	1	6	2	1	3	7	0	15	10	0	12	10	0	3	0
1923	1	8	8	0	19	10	0	8	10	0	13	4	0	9	6	0	3	10
1924	1	8	4	1	1	9	0	6	7	0	14	10½	0	10	4½	0	4	6
1925	1	2	7	0	18	9	0	3	10	0	15	7	0	12	8	0	2	11
1926	1	0	10	0	13	7	0	7	3	0	16	6	0	11	3	0	5	3

THE EGG PRODUCTION.

There can be no doubt that one of the main reasons for the success of poultry keeping on this farm has been the

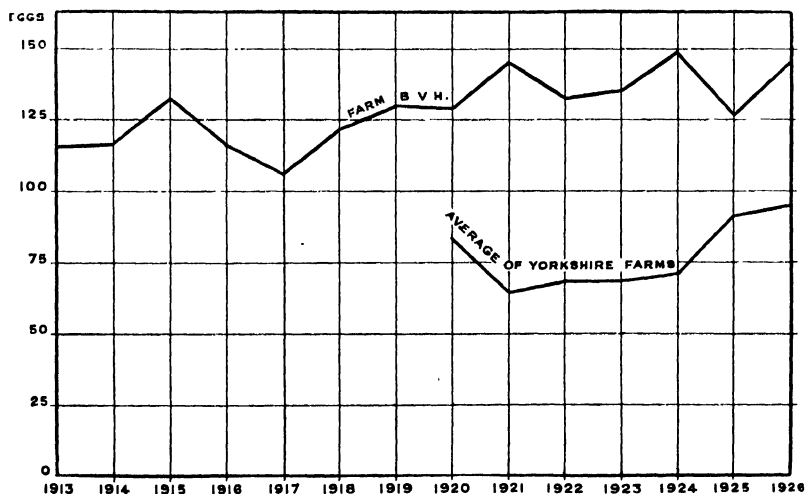


Fig. 11.—Egg Production per Laying Bird.

fact that the egg production has been throughout uniformly high, and it is still more interesting to find that it has not suffered any diminution with the increase in the size of the

flock. Actually the reverse seems to be happening, and the results of trap-nesting and selection are to be found in the grading-up of the flock.

Yields have undoubtedly fluctuated from year to year as a result of various disturbing factors. During the war it diminished rapidly owing to the difficulty of getting food-stuffs of the desired type for the maintenance of correctly balanced rations. The 1925 records were again disappointing, as the pullets in that year did not come up to expectations.

No high profits from poultry can be expected unless the egg production is high, but the egg producer who makes the most out of his eggs is the one who aims at producing a large amount of eggs during the time when prices are high, and the secret of success in the case of the poultry keeper is high egg production during the winter months. To what extent this acme of success has been reached on the holding under review can be seen from a glance at the following graph illustrating the monthly variations in the egg produc-

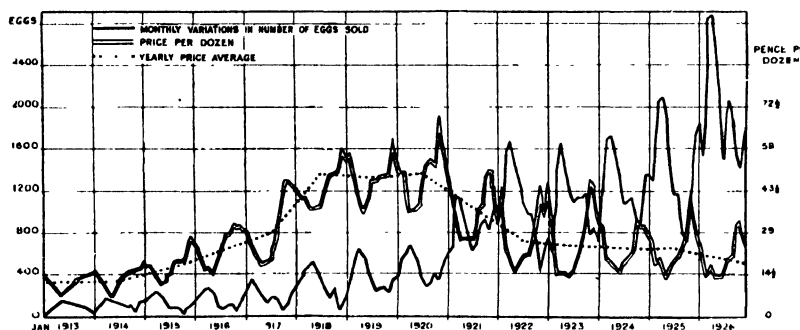


Fig. 12.

tion and the prices obtained per dozen, while as a matter of interest the average annual price per dozen has also been plotted for the fourteen years.

The monthly yields and prices show the typical variations of egg production generally. In the spring of each year there is a heavy yield and correspondingly low prices. In the autumn and winter the reverse is the case. Right through the aim has undoubtedly been to obtain the eggs during the time that matters, an aim which to a large extent has been achieved, for we find that during the fourteen years 41 per cent of the eggs have been produced during the six winter months—September to February,—and 59 per cent during the six summer months—March to August inclusive. The proportion of winter produced eggs fell considerably during the war; in 1918 to as low as 25 per cent, definitely due to

the very poor quality of foodstuffs. Since then there has been a steady and gradual improvement, and in 1926 the proportion stood at—

44	per cent	produced in the	winter months, and
36	„	„	summer months.

The fourteen years' records have been, as far as we are concerned, exceedingly interesting and instructive. They have proved conclusively the economic value of poultry on the farm; they have shown that from small beginnings a flock can be quickly built up, financed from within, and made to leave quite a useful margin of profit. They have shown that if the most is to be made of them, they must be well-fed, well-cared for, and housed effectively though not extravagantly, and that time and money so spent are spent well, and bring their own return. Our regret is that so few poultry keepers have laid themselves out to study their flock as it has been studied on this holding, and that so few carefully kept records of well-managed flocks are available over so long a period.

There can be little doubt that one of the reasons for the financial success of this holding has been the accurate and systematic keeping of complete records, which have at once revealed both the weak and the strong points in the organisation and general management.

SUGAR BEET CULTIVATION.

By WILLIAM BRUCE, M.A., B.Sc., Seton Mains, Longniddry.

IN this article it is proposed to deal with the practical aspect of growing sugar beet, particularly from the point of view of the Scottish farmer. Last year the writer grew about thirty acres; this season he proposes to do the same, and in common with many other growers, he has been doing his best to find out how to grow this crop as profitably as possible. It is not thought necessary to discuss sugar beet culture historically, although undoubtedly the history of the development of this branch of farming in Germany, Holland, Belgium, Austria, France, and other parts of the Continent during the last century is interesting, and provides both a stimulus and a warning. The success attained in these countries has made the sugar beet industry great national assets, which have been highly beneficial to the cultivators, and our foreign competitors are not likely to give way to us without a grim struggle. A few figures may serve in a general way to convey some idea of the position. Prior to the war nearly 2,000,000 tons of sugar, or about 96 lb. per head of population, was imported into this country annually. About two-thirds of this huge quantity was beet sugar, and the development of sugar beet growing in Germany and Austria-Hungary alone was responsible for these two countries sending to this country a surplus 1,000,000 tons. What these countries did in the nineteenth century it is our desire to accomplish in the early part of the twentieth. Under the shelter of a subsidy, it may be said that we have been given a ten years' apprenticeship. We must, therefore, try to learn quickly, and build up from a knowledge of our own conditions and experience a technique of our own; for undoubtedly we have much to learn, and many economies in our methods to perfect, before we can hope without a subsidy to hold the market against this highly organised foreign competition.

THE SUGAR BEET.

The sugar beet (*Beta vulgaris*) belongs to the same family of plants as the more familiar mangold or mangel wurzel,

and, like it, originated from a wild plant said to have been found on the shores of the Mediterranean. It is a biennial—*i.e.*, normally it should take two years to grow to seed. But unfortunately one of the great troubles in its cultivation is its tendency to depart from this characteristic by attempting to run to seed in the first season, when it is said “to bolt.” In the first season of its growth its vegetative activities should be entirely devoted to the production of a large store of reserve food, chiefly sugar. In cultivation the sugar content is found to vary from about 13 to 20 per cent. The chief factors producing variation are variety, climate, soil, manuring, and time of harvesting. This high sugar content is the result of a great deal of patient work in selection and breeding which has been carried on through a long series of years, with the result that valuable strains of the plant have been established, and these strains are maintained only by great care on the part of the seedsmen. Indeed, the sugar beet is probably the most scientifically bred plant in the world. The enormous demand for seed has enabled Continental firms to spend large amounts of money on scientific skill and management in the production of seed of high quality. Most of these big seed-producing firms claim to be able to supply seed suitable to our conditions, and they do so at a price that makes the cost of seeding sugar beet a very small item in the cost of growing.

So far the factories in this country have secured sufficient seed from this source to supply all growers at about sixpence per pound; and they stipulate in their contracts with farmers that only the seed supplied by them shall be used, their object being to ensure that only good and suitable seed shall be sown. No doubt the factories, buying on such a large scale with skill at their command, are in a strong position to secure good seed at a low price, and there is good reason for believing that they exercise great care in their selection. Nevertheless, certain results obtained by the users of this seed sometimes raise suspicions as regards its suitability for our local conditions. A few English firms of seedsmen have now entered the field, and are producing limited quantities of seed, which has been tried by some growers against the seed supplied by the factory with excellent results. There appears to be room for investigation to determine whether the seed supplied is the best we can get for our purpose, and we understand the factory authorities are about to initiate systematic experiments for this purpose. One of the biggest troubles of the grower is bolting, or running to seed, in the first year. This seems to be a subtle defect that is not well understood so far. It certainly causes widespread general loss of yield. It is more prevalent with early sowing, and probably arises from exposure of the young plant to ground frost. The per-

centage of bolters varies from farm to farm with the same seed sown on the same date. Although bolting appears to be stimulated by early sowing, experience seems to indicate that it is better to risk this, even at the expense of a fair proportion of bolters, rather than delay the seeding, which usually results in a smaller return per acre.

The size and shape of the sugar beet root is of great importance to the grower. The mature root should be a long tapering tap root, as shown in Fig. 13, which under favourable conditions may penetrate the soil to a depth of several feet.

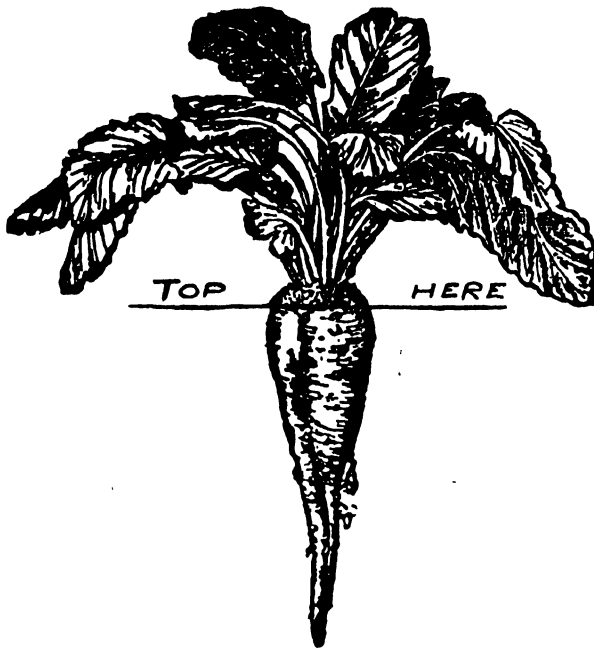


Fig. 13.—A well-shaped Sugar Beet, and where it should be topped.

Shapely roots have usually a high sugar content, and possess a "twist" or spiral-like groove running up the whole length of the exterior of the taproot, known as the sugar groove. This groove when present is taken by experts as an indication of high sugar content. The taproot carries an extensive development of fine fibrous rootlets, which penetrate the soil in all directions in their search for food and moisture, and this development is greatly promoted by suitable tillage. When the crop is lifted the elongated point of the taproot and most of the fibrous roots are left in the soil. In normal growth nothing but the top or crown of the beet projects

from the soil, and it carries a luxuriant crop of leaves. In some cases these grow upright: in others they spread and form a rosette. Indeed, the writer has counted as many as four more or less distinct types in the crops he has seen, and this may be taken as an indication that the seed we receive is not all that could be desired. The actual amount of top varies a good deal with climatic conditions, the nature of the soil, and the manurial treatment it receives. Abundance of foliage is no guarantee of a heavy crop. In 1926 the writer produced over 12 tons per acre; in 1927, with very similar foliage, the yield was only 9 tons, and many growers shared the same disappointment. Nevertheless, a healthy development of top may be regarded as essential for good roots and high sugar contents, inasmuch as it is in the leaves that the sugar which is found in the root is first formed. A healthy and ample development of foliage is therefore of great importance, and the cultivator's skill can do much to make or mar its growth. Liberal manuring with well-balanced dressings is desirable, but overfeeding, particularly with excess of nitrogenous manure, will cause an overgrowth of tops, and is to be avoided. Moreover, large coarse beets are usually low in sugar content.

A well-grown beet should weigh from 1 to 2 lb.; roots weighing about $1\frac{1}{2}$ lb. are looked upon with favour at the factory. It is maintained by the sugar beet experts that the ideal distance between the rows on the flat is 18 inches, and about 9 inches between the plants in the row. At this distance, if the work of singling is carefully accomplished, there should be about 38,000 plants per acre, and a full stand of beets weighing $1\frac{1}{2}$ lb. would give a crop weighing about 25 tons per acre. Should the roots average only 1 lb., a full crop would still weigh 17 tons, and allowing 10 per cent for partial failure, there is still the possibility of 15 tons. As few have grown more than 12 to 13 tons per acre, and many have averaged not more than half what these figures indicate as possible, there appears to be ample room for improvement in cultivation. In actual practice the champion prize crop in Great Britain last season—viz., 15 tons 11 cwt. per acre—was grown on an area of about 6 acres by dibbling three seeds at regular intervals of 10 inches in rows 16 inches apart. The correct shape of root is of great importance. Short dumpy roots which tend to rise out of the ground and show green crowns, usually seen on shallow land, are undesirable; and branching fangy roots are most objectionable, as they are more difficult to deal with at the factory, and on the farm the crop is not only lighter than a well-grown one, but it is much more difficult to clean. Besides, there is loss of weight, as well as trouble about dirt and tare. A common cause of fangy roots is a heavy dressing of dung too recently applied. The sugar beet is white or flesh-

coloured, and, unlike mangels and garden beet of the same family, does not bleed when cleaned and "topped" for the factory, and therefore loss from this cause need not be feared. The tare on well-shaped roots should fall between 10 and 15 per cent; but on a fangy ill-grown crop it may be double this, and bring the grower a poor return, for he has to pay carriage on the heavy tare, and loses some of the best of his land.

CLIMATE AND SUGAR CONTENT.

Much has been written and said to persuade prospective growers that the Scottish climate is suitable for sugar beet, and that abundance of sunshine is not essential to successful sugar beet culture. From the practical point of view experiments conducted in England in 1912, which was a very dull wet year, have been quoted as demonstrating that sugar beet of good quality can be grown in many parts of England under such conditions, and statistics of analysis made at the Cantley Factory from the produce of several thousand acres for the years 1921 to 1924 have been quoted to prove that there was little seasonal variation. It has been stated that a dull wet year such as 1924 produced beet with as high sugar content, or even a higher, than a dry hot summer with much sunshine such as 1921. And from the scientific point of view it has been stated that recent research points to the fact that starch and sugar formation in plants is dependent on the ultra-violet rays of light, and operates in dull weather as well as in bright sunshine. But the results obtained last year have done much to shake confidence in these arguments. In 1927 the weight of crop was not only poor, but the sugar content in well-grown crops fell from 17 to 18 per cent, obtained by many in 1926, to about 15 to 16 per cent, and in badly grown ones to even 14 per cent. This, of course, is all-important to the grower, as he is paid on the yield of sugar, and carries the full burden of failure. As we stand, our experience is that sugar beet culture was reasonably successful in Scotland in 1926, while in 1927 it was a dismal failure, and the frequency of such years has still to be discovered by experience rather than by theory. In Scotland the ordinary farmer, with ordinary conditions, probably does well to hasten slowly in adopting sugar beet as a crop. He should rather aim at doing a small area well.

SOILS.

The ideal soil for sugar beet culture appears to be a deep friable loam, or sandy loam, free from stones; and it is also desirable that it should be as free as possible from perennial

weeds such as couch grass—just the conditions that result from continuous good husbandry. On such a soil, with a limited amount of appropriate manure coupled with careful cultivation, big crops of well-shaped roots of high sugar content can be produced; and it is doubtful if, year in and year out, profitable crops can be got in Scotland under any other conditions. Sugar beet once it is seeded affords only limited facilities, compared with other root crops, for either deep cultivation or dealing with weeds except those known as surface weeds, as this crop does not appear to stand up well to very severe cleaning operations. Plenty of hoeing and surface tillage is desirable and beneficial for cultural reasons, and incidentally will keep down weeds, but the less it has to be undertaken solely as warfare against them the better it will be for the prospects of a good crop. A sugar beet soil should be of sufficient depth to allow deep ploughing without deteriorating the quality of the surface soil. Any depth of soil less than 8 to 9 inches cannot be regarded as satisfactory unless it overlies an easily penetrated subsoil, and in that case one should think twice before the latter is disturbed by either plough or subsoiler. The soil should also be well drained, so as to be free of any sourness from stagnant water, and it should have a good lime content. Such, then, are the ideal conditions; but given some approach to these essentials, with what assistance man can give in that direction, sugar beet is likely to be grown successfully in most years on a wide variety of soils. Clay land in Scotland is probably the least suitable, as climatic conditions as a rule render this class of land liable to be wet and sticky in autumn, and this is a serious, indeed almost an insuperable, impediment to lifting and cleaning the crop. Besides, working under such conditions is very hurtful to the soil, and makes the tops, a by-product which should be of considerable value as food for stock, of comparatively little use except to plough down as manure.

From a negative aspect, the following characteristics are generally enumerated in the literature of sugar beet as being unfavourable: (1) Thin shallow soils and any hard and impenetrable condition of soil or subsoil such as may result from continuous shallow ploughing, or the formation of a "pan" from any cause whatever between soil and subsoil. (2) An acid or sour condition resulting from bad drainage and imperfect aeration, particularly where there is excess of organic matter. Sugar beet grown on peaty soils not only as a rule gives a light crop, but is poor in sugar content. (3) Acid or sour soils which are deficient in lime and frequently are additionally sour owing to excess of partially decomposed organic matter. Many failures in Scotland, where frequently soils are found to be markedly deficient in lime, have been traced to this cause. The majority of successful growers have been careful to take

the precaution to eliminate risk of this by making some dressing of lime a regular part of their cultural operations. It is doubtful, however, if in bad cases a dressing applied just previous to seeding is always sufficient to bring about the necessary amelioration in time for that crop. (4) Gravelly subsoil, or any condition that will interfere with storage, retention, and circulation of moisture in the soil and subsoil, is prejudicial, as obviously steady and sustained growth cannot be maintained without drawing on reserves of moisture. The sugar beet plant will persist against drought as well as, and probably better than, most plants, owing to its deep rooting habit; but checks in growth, such as may be caused by an inadequate water supply in a dry period, are liable to cause second growth, which may seriously reduce the sugar content.

THE PLACE OF SUGAR BEET IN THE ROTATION.

On the Continent sugar beet commonly replaces our root crop as a fallow crop; and while what is common there is not likely to become the practice here, at least in the near future, it may be suggestive of possibilities. There the wet and dry sugar beet pulp and tops, which very often are made into silage, play a big part in the place taken by our roots as food for stock, and no doubt the success attained in this country with these new by-products shows that they are capable to a considerable extent of replacing turnips in systems of feeding live stock. This points to the possibility of a curtailment of the area devoted to turnips, which are frequently said to be an unremunerative crop, and their partial replacement by sugar beet. In the beet-growing areas on the Continent this crop occupies the land every three or four years. Such rotations as (1) beet, (2) wheat, (3) oats or rye, which may be followed by (4) clover for hay, make a popular four-course shift. This does not appear to be too suitable for our conditions. Wheat seeding after sugar beet would frequently be too belated for our climate; besides, such a hasty reoccupation of the land would leave less opportunity of making full use of the tops. It would also presuppose that suitable sugar beet land in our climate would be wheat land, which is doubtful. But the substitution of oats for wheat, and barley for rye, would make this rotation suitable for our conditions in many cases. A four-course rotation similar to our Norfolk rotation is also popular on the Continent—viz.: beet, oats or barley, followed by clover and then wheat. This might be extended to a five course by taking potatoes or turnips after the wheat and before the sugar beet. If the potatoes or turnips were well

dunged this would be an excellent preparation for sugar beet. Such a rotation has many characteristics of a first-class one, and it to some extent overcomes the congestion of following October-lifted potatoes by wheat, and at the same time getting on with the timely harvesting of a considerable area of sugar beet. Of course, sugar beet may simply displace part of the potatoes or turnips in the rotations presently in common use. But our custom, and it is a convenient one, of applying all the dung of the rotation to these crops does not fit in so well in the case of sugar beet. This dunging is heavier than would be advisable for sugar beet, and to depart from it would put the manuring scheme, which is found to work well, out of joint.

These are just to be regarded as suggestive examples. The writer has no desire to dogmatise as to any particular rotation for sugar beet. He favours growing it by artificial manure alone after potatoes that have been liberally manured with dung and artificial manure. His experience is that this treatment brings land into excellent condition for growing sugar beet, and that heavy crops of excellent barley can be got after the sugar beet without any manure at all. Sugar beet follows potatoes well. The land should be clean; it is available for deep ploughing; it is in good heart to the full depth of the ploughed land, and consequently in a fit state to grow a good crop of sugar beet with only a moderate amount of artificial manure, and a corn crop can follow on the residue of manures applied to the two previous crops.

Another line worth consideration, especially for those who wish to grow sugar beet and have only a limited part of their land suitable, is to adopt a special short sugar beet rotation. On the Continent it is grown in many cases very successfully every third or fourth year, in some every other year and even year after year. The writer has grown it twice in succession without any falling off, although this is not to be recommended, as the crop would be more liable to succumb to insect attack, and the soil would tend to become acid unless lime was freely used.

PREPARATORY CULTIVATION.

The proper preparation for sugar beet should invariably be deep ploughing in autumn or early winter. In some cases subsoiling may be undertaken to deepen the soil or to break the bottom if it is hard and indurated; but this is not to be done without due consideration, tested if possible by experiments, for only in some cases has subsoiling been found to increase the crop; in others it has actually been detrimental. The ploughing should be as deep as the conditions will permit, without bringing raw unweathered soil to the surface. The

land, having been well ploughed, should be left to the action of the weather, so as to secure a good mellow tilth, and it is generally undesirable that this should be buried by any subsequent ploughing. This mellow tilth is of great importance in securing a good braird quickly after sowing. Late ploughing on most soils tends to produce a harsh dry tilth, which is unfavourable to rapid germination, especially in dry hard weather so common in many parts of our country in May, and retarded germination results in a thin gappy braird, which deprives the grower of thousands of plants short of the possible number. This cuts down the possible yield from the beginning. No doubt the plants that grow adjoining the blanks are larger, but they take longer to cover the ground, and never make up the full weight. Besides, the larger roots are lower in sugar content than the medium-sized ones from a close crop.

It is a debatable point whether a dressing of farmyard manure should be ploughed in as a preparation for sugar beet, but if the land is not in good condition, no doubt a moderate dressing of dung will tell on the yield, and may have little or no prejudicial influence on the quality of the crop if it is well broken up and ploughed in early. Growers are, however, cautioned from long experience against more than a light dunging of, say, 10 to 12 tons per acre. Dung is objected to chiefly on the grounds that it favours coarse growth and fanginess. The writer favours the view that the sugar beet crop is specially suited to land in good heart. On such land, by the liberal use of artificial manures, one of the cheapest factors of production to-day, first-class crops of sugar beet of good quality will be obtained more cheaply than by the use of dung; and so long at least as this crop is confined to a limited area of the farm, a better use for the dung will usually be available. At any rate, the point is that direct application of dung is not in great favour with experienced sugar beet growers, and is not essential to success.

The spring working of the land should start as early as possible. It is highly advantageous to have the land worked dry and ready to sow some little time before seeding. If the tilth is good this draws moisture to the surface. The spring tillage should be directed with the object of securing a deep firm tilth with a very fine surface, and all fertilising materials should be well worked into the soil. As a rule, the first operation should be the application of lime. This should be harrowed in at once. Then, assuming that the crop is to be grown in rows on the flat, the artificial manures should be applied so that they may be thoroughly worked into the soil by the subsequent tillage operations. Frequently the application of manure is delayed until the land has been more or less completely worked, and the manure will remain mostly in the

surface of the soil, where it either promotes the rapid growth of surface weeds or lies more or less inactive in a dry time. The writer suggests that the manure should be incorporated with the soil to the full depth of the tillage. It should be remembered that sugar beet is grown in relatively close rows, and the young plants very quickly penetrate to the full depth of the cultivated soil and send out rootlets, which ramify in all directions in search of food and moisture. There is little danger of the seedlings suffering from want of nutriment by this method of manuring, because when they are making a start in life there will be, owing to evaporation, a strong current towards the surface of moisture laden with soluble plant food, which will keep them amply supplied.

In working the land to secure a deep tilth with a fine surface there is nothing better, where a tractor is available, than one or two turns with a disc harrow. This completely breaks up and pulverises the soil to a depth of several inches, and prevents raw clods rising from subsequent deeper stirring. If the disc harrowing is followed by a final deep stirring with a good heavy cultivator set to go as deep as possible, then all that remains to be done to secure a good seed bed is as many turns of harrows and roller as are necessary to make the surface fine and firm; and this is very essential for success. For the deeper operations, if the land is dry, a tractor is very helpful, but the later and lighter workings are better done by horse-drawn implements. Nothing has been said about weeds. The thorough preparation of the land gives scope for collecting and removing perennials, and if annuals are troublesome it will be very helpful, conditions permitting, if the land be worked ready for seeding ten days or a fortnight before it is required, and then given a vigorous harrowing just before seeding. This kills many weeds, both visible and invisible. When the land is rested in this way rapid germination is promoted, and cultivation between the rows can be started in the shortest possible time.

MANURING.

It now appears desirable to discuss the fertilisers required in the culture of sugar beet. The chemist can show us that this plant takes up a considerable amount of lime, and there is general consensus of opinion that the sugar beet grower must use lime. On the Continent it is the custom to rely on the sugar beet waste lime from sugar beet factories, where large quantities are available, as a by-product. This waste by-product, obtained in the process of manufacturing sugar, after settling, dries and falls to a powder which contains about 50 per cent of water, and the dry matter is mostly

carbonate of lime, with small quantities of phosphates and potash. A typical analysis of it is as follows :—

	Per cent.
Organic matter	2·85
Potash (K_2O)	0·13
Phosphoric acid (P_2O_5)	0·48
Lime as carbonate ($CaCO_3$)	45·55
Water	50·00
Other constituents	0·99
	100·00

It is usually sold to growers at about five shillings per ton, and is a useful substitute for lime on farms within easy distance of the factory; but being a bulky product it will not pay to put much carriage on it. Cupar Factory has now a scheme for overcoming this drawback by drying it artificially. This dried product is to be offered at 12s. 6d. per ton on rail, and will be worth consideration from growers within a greater radius of the factory. Carbonate of lime, however, even when dry and pure, is a bulky form of lime. Roughly, 1 ton of it provides no more lime than is contained in 12 cwt. of good shell lime or ground lime. From various sources carbonates of lime are available to growers in need of lime, and they are quite suitable forms for applying to land, but they all suffer from being bulky and costly in transport for a given quantity of lime, a fact that is not always given full consideration in practice.

Deficiency of lime is a general characteristic of Scottish soils, and it would not be prudent to attempt to grow sugar beet without either applying a moderate dressing of lime in some form or having assurance by testing the soil that the lime content is satisfactory. Not a few Scottish failures to grow sugar beet have been traced to acidity or want of lime in the soil. Most growers, however, do take the precaution of applying some dressing of lime. The amount required will depend on the degree of acidity. On soils that have been regularly limed or have no special lime requirement, 10 to 12 cwt. ground lime per acre is an ample dressing. In other cases up to 1 ton per acre would not be an overdose. As a rule, when the quantity required exceeds 1 ton per acre, it is more economic to use ordinary shell lime, unless it is found cheaper to apply the equivalent quantity of carbonate of lime. When heavy dressings of lime are required and forms of quick lime, such as shell lime and ground lime, are to be used, it is desirable that the application should be made as long before seed time as is possible, because these dressings applied late retard growth for several months. The writer,

in conducting numerous experiments in manuring turnips many years ago, had frequent instances of this effect of fresh lime applied in even 10-cwt. dressings at the beginning of the growing season, and it is therefore better to avoid any risk of retarded growth from this cause.

A liberal and well-balanced dressing of artificial manure is a *sine qua non* in growing sugar beet. To do well the plants must be well nourished. A moderate application of good farmyard manure ploughed down early in the year will be helpful, especially where land is not in good heart, but excess of dung or organic matter is not desirable for this crop. It is liable to cause the taproot to branch and produce coarse fangy roots, and, in a wet season, a rank growth of foliage, which may be accompanied by small inferior roots. The most successful growers apply as a rule 8 to 10 cwt. of good quick-acting manure in the spring, and follow with one or two top-dressings of a quick-acting nitrogeous manure after singling. It is rather important that the potash content of the spring dressing should be high, especially if no dung has been used, as sugar beet is found to be very responsive to potash manures. A typical dressing would contain 5 to 6 per cent ammonia; 16 to 18 per cent phosphates, mostly soluble; and 10 to 12 per cent potash. Such a manure can be produced by mixing 2 cwt. sulphate of ammonia, 3 cwt. super-phosphate, 1 cwt. steamed bone flour, and 3 cwt. of 30 per cent potash salts. This compound, worked into the land before seeding at the rate of 7 to 10 cwt. per acre according to the condition of the land, should be followed by a top-dressing of about 1 cwt. of nitrate of soda, or its equivalent of some other quick-acting nitrogeous manure, just after singling, and as a rule this is repeated in about three weeks. This may be regarded as the normal treatment, but, of course, it may be varied a little according to the circumstances. Nevertheless prospective growers courting success must realise that sugar beet is not an ordinary farm crop. Intensive potato culture is probably the nearest approach to it in Scotland. The grower from the start is committed to a heavy outlay on labour, and a profit depends on getting the maximum yield and not on saving a few shillings on manuring unless one is perfectly sure about it. Every factor of production must be given its full value, and generous manuring is, at present prices, the cheapest of them. For this reason the writer recommends what in some districts may be looked upon as a heavy if not extravagant general dressing, although this will not by any means be the case in some of the districts where the best results have been obtained. Besides, this generous treatment is not only a modest bid for success, but it will have its influence on the succeeding crops.

While generous manuring is here advocated, it is neither

necessary nor desirable that the treatment should be altogether reduced to a recipe. Modifications are desirable. Circumstances should, for instance, influence the amount of top-dressing, which should vary according to the condition of the land. It might in some cases be expedient to withhold the second one altogether. One must guard against grossness of growth and excess of foliage; while in some cases heavier top-dressings than those suggested have been used with success, especially in dry climates, whereas in others the circumstances might be met by giving one generous top-dressing of a mixture of, say, $1\frac{1}{2}$ cwt. of a mixture of nitrate of soda and sulphate of ammonia. Moreover, although nitrate of soda has long enjoyed a popularity over other manures as a top-dressing, and up to 3 cwt. per acre are used on Continental farms, recent experimental work in this country has not demonstrated its superiority over sulphate of ammonia and the new nitrogenous manures, such as nitrate of lime and nitro-chalk, both of which, and particularly the latter, possess the advantage of providing a certain amount of lime. It is frequently stated in favour of nitrate of soda that it suits an inherited preference of the sugar beet plant for saline substances. Its diffusibility certainly puts it quickly into the circulation of soil moisture, and thus within range of the rootlets of the crop, hence its rapid action. This characteristic is specially valuable in a dry climate and in dry weather; and even in wet climatic conditions the risk of loss at this season is not great, for the rainfall is seldom sufficient to set up drainage, and evaporation at the surface of the land and the absorption of the roots soon re-establish currents in the circulation of soil moisture that counteract the tendency of this manure to get out of the range of the roots of the crop. Nitrate of lime falls into much the same category as nitrate of soda. On the other hand, sulphate of ammonia is usually regarded as slower and more prolonged in its action, and when applied as a top-dressing less likely to suit deep-rooted crops. But these characteristics are greatly modified in summer temperatures; and the results of experiments in our country seem to indicate that sulphate of ammonia on good land is in many cases capable of yielding as good results as nitrate of soda. But it should not be used on soils known to be deficient in lime. For this purpose the new nitrogenous manure, nitro-chalk, has much to commend it. It makes a direct contribution of lime to the soil, and its nitrogen is in forms that should make its action at least comparable to a mixture of nitrate of soda and sulphate of ammonia. There is really not sufficient evidence so far to justify any one stating that any one of these nitrogenous manures is superior to any of the others as a top-dressing for sugar beet. Much depends on conditions; and having referred to some of the

more important considerations, we must leave it at that. One outstanding fact, however, emerges from all experimental work, and that is that it does pay to top-dress sugar beet liberally with quick-acting nitrogeous manures.

There are a few more points connected with manuring that are worth referring to before leaving this subject. In the general manurial recommendation given, the manures have been chosen for their general suitability for the crop and for compounding into good sowable mixtures that can be applied as one general dressing. But the selection is by no means exclusive. Basic slag, for instance, has been found by experiments to yield good results on sugar beet, and if well worked into the soil it is specially suitable where lime is deficient. On many soils it is slower in its action. Again, kainit and 20 per cent potash salts have been much recommended and used for sugar beet, as they supply potash with a good deal of common salt. Even common salt has been used. But these appear to the writer to be more appropriate as supplementary dressings for light land, often deficient in potash, particularly where the use of dung is not much in evidence. It is not, however, desirable to apply heavy dressings of these soluble saline manures at sowing time, as they have a tendency to retard germination and growth, particularly in a dry time, when, as the result of evaporation, they tend to concentrate at the surface of the soil. If required in heavy doses, they should be applied early. The action of basic slag is also improved by early application.

SEEDING AND SUBSEQUENT CULTIVATION.

The middle of April is frequently stated as the time to sow sugar beet, but from experience in an early district where swedes are often sown in April, the writer is inclined to the opinion that the beginning of May is early enough in Scotland. There is good reason for believing that early sowing favours bolting, although it is by no means the entire cause of this. Besides, until the conditions are favourable for rapid and uniform germination of the seed, nothing as a rule is gained by early sowing, for in addition to being favourable to bolting it may enable weeds to get the upper hand. But if the land is dry and fit to work, no time should be lost in getting it ready, so that no opportunity of favourable seeding will be lost. If light land, which is sugar beet land, is worked beforehand it draws moisture to the surface, and encourages the germination of annual weeds, which are often troublesome in sugar beet growing, and these, when sprouted, can be destroyed wholesale by harrowing vigorously both before and after seeding. Land prepared in this way produces a good uniform braird of sugar beet, which becomes quickly visible,

facilitating early tillage, followed by early singling, and, this accomplished, the grower is firmly on the highway to success.

It is generally conceded that the correct method of seeding sugar beet is to sow it in rows on the flat. It is the method generally adopted on the Continent and in England, where it is in common use for fallow crops. But in Scotland, for good reasons, our root crops are grown on the ridge, and all our implements are made for this purpose. Therefore, in the experimental stage of sugar beet culture many growers have not thought it worth while to introduce new and unfamiliar ones. Moreover, those hired out by the factory for the purpose impressed neither the grower nor his man favourably, and were not always available when wanted. This explains why many growers have tried the crop only on ridges. Where these have been reduced to about 24 inches—about the smallest size that can be worked with the implements in common use—and well rolled after seeding, quite good results have been obtained. The first prize awarded by the factory in 1926 for the best small area was gained by a 13 ton crop grown in East Lothian on 24-inch ridges in much the same way as turnips. This method has some advantages in addition to suiting the implements and skill available, especially in the moister climate of Scotland. It allows of better inter-tillage, which is of considerable importance when the land is foul with weeds; it makes singling easier and less expensive; it facilitates the incorporation of the manure with the soil, and provides greater depth for the plant and thus helps a shallow soil to produce more shapely roots. On the other hand, the crowns of the beets tend to be green and coarse from exposure, and this increases the tare and lowers the return from the crop. But the greatest drawback is the lower number of good plants that it is possible to grow per acre. The writer is convinced that if ever sugar beet culture is to be seriously undertaken it will have to be grown on the flat, and he therefore gives his own experience in doing so.

Sugar beet growers are greatly indebted to the enterprise of Mr Robertson of Messrs Sherriff & Co., Dunbar, who last year, after various trials and consultations with enthusiastic growers, brought out a machine that has proved to be of great service in promoting the culture of sugar beet on the flat. This machine sows the seed expeditiously with great precision, and is capable of being modified to do all the subsequent tillage probably as well as it is possible for a multiple implement. It has a strong triangular frame mounted on three wheels. This makes it run steadily over the ground with no swing. When sowing it is drawn by two horses, and there is a steering-pole and marker, so that one man can drive the horses, steer the centre wheel along the mark, and manipulate the machine, having everything in view. It sows four rows, and the coulter

are adjustable to various widths and depths. Following each coultter a heavy roller consolidates the soil over the seed. Fig. 14 shows the machine fitted for sowing the seed. When this work has been accomplished, the seed-box and coultters are taken off and a steel floating frame is attached below the main frame of the machine. This lower frame, carrying discs and cultivating tines, can be steered so as to run very near the rows of plants without injuring them by a steering

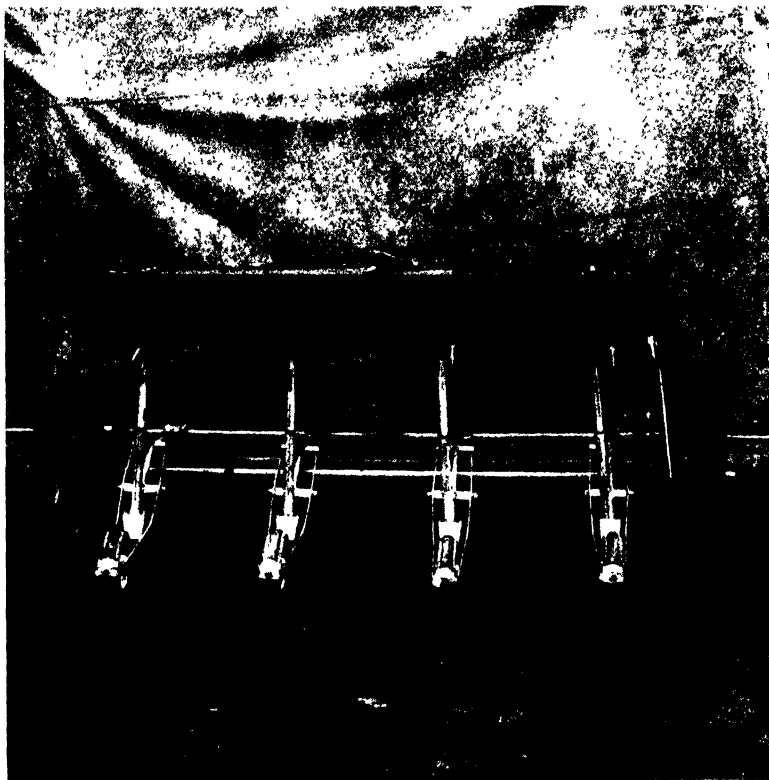


Fig. 14.—*Sherriff's Sugar Beet Sowing Machine.*

gear manipulated by a man who sits in close and full view of all that is going on. This steering and manipulating the machine requires his careful and undivided attention. He steers by hand, and can lift the machine clear of the ground immediately by foot pressure, either when turning or should any obstruction or danger to the rows of plants arise. Meanwhile another man gives careful attention to driving the horses and steering the main frame by means of the front wheel. He also is provided with a seat near his work. On

land reasonably free of stones the hoes and discs can be worked very close to the rows of growing plants without risk of cutting them. It thus effects a great saving in hand labour, and facilitates the slapping and thinning and the after cleaning of the rows.

A considerable range of hoes is provided with the machine, and they and the discs can be adjusted so as to undertake a variety of work. With horses travelling at a slow steady pace, which is best for good work, about 8 acres per day can be covered. Fig. 15 shows the machine with the seeding appliances removed and fitted with discs for cleaning the weeds away from the rows of young plants, and a set of

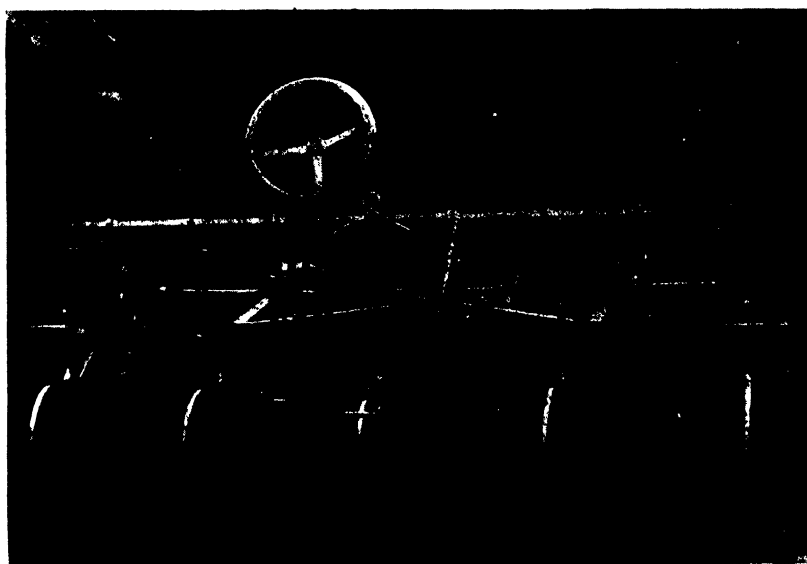


Fig 15.—*Sherriff's Sugar Beet Sowing Machine fitted as a Cultivator.*

broad duck-feet hoes which clean the spaces between the rows. Set in this way, the work can be commenced as soon as the rows are well braided. This prepares for and makes early gapping and singling easier. Undoubtedly this machine on suitable land is a great labour-saving device. It was awarded the Silver Medal for new implements at the Show of the Highland and Agricultural Society last year. The writer has visited most of the large exhibitions of implements in this country looking for implements suitable for sugar beet culture, and has seen nothing that appealed to him so much as this one, and he has now tested it with satisfaction on about 60 acres of crop. Fig. 16 shows the machine at work just before the rows of plants were ready to single.

Although made for two horses, the writer prefers in light cleaning operations to use one strong, steady-going, neat-footed, close-walking horse, which can be guided between 20-inch rows with little risk of damage. The best width of rows is a disputed point. On the Continent 16 inches to 18 inches is favoured. In this country it is contended that this is too narrow for our horses and gives insufficient scope for cleaning operations. As regards the latter, the writer has already expressed the view that dirty land is not well suited for securing the best results. As regards the width between the rows on land that readily grows abundance of annual weeds,



Fig. 16.—*Sherriff's Sugar Beet Sowing Machine at early work.*

the writer experienced no difficulty in working and keeping his crop absolutely clean in the wet season of 1927, when he drilled and worked the whole of about 30 acres on the flat in rows 20 inches apart. The average yield was 9 tons 4 cwt. per acre, with 17·2 per cent sugar. All was grown without dung, and the last break was not sown until the end of May. In 1928 a similar area is drilled 18 inches between all the rows excepting the one at the centre of the machine, which has been set to 20 inches for the horse walking in cleaning operations. An essential point to remember in the use of a multiple machine, such as has been described, is to make it follow its own track from the sowing of the seed to the last operation.

If this is not done, slight irregularities in the width of rows between the sets of rows made by each turn of the machine will give serious trouble, and, of course, the best possible steering will not eliminate these little irregularities. But there is no difficulty if the seed has been carefully sown, and the machine in cleaning operations follows the same set of rows.

The general principles of the tillage required for sugar beet have been fully outlined. In dealing with the actual sowing of the seed, the writer would finally emphasise the importance of having the soil well broken up and consolidated to its full depth so as to make sure that no clods or air pockets will be encountered by the plant, particularly in its early growth. Anything of this sort will affect the braird, and also the stand of plants that continue in vigorous growth. The seed-bed should therefore be prepared by the free use of the roller and harrows both before and after drilling the seed. A liberal quantity of seed should be drilled, and in order to secure an unbroken line of plants nothing less than 15 lb. per acre should be used. The closer the rows, the more seed. The writer has found 18 to 20 lb. better than 15 lb. The seed is cheap, and this obviates bare patches after singling. Care should be taken to have the seed sown not more than 1 inch deep, and well covered. Immediately after seeding it is desirable to roll and harrow with the Parmiter harrows. This gives a firm fine surface free of footmarks, and nothing more needs to be done unless the ground gets crusted on the surface before the plants come through. If so, this should be broken at once by the Parmiter harrows or the roller. Should a considerable growth of annual weeds come on before the braird, it will do great good and little harm to pass the Parmiter harrows over the surface, even across the rows. Cultivation by horse hoeing should be started as soon as the rows can be seen. It does not appear to be desirable that this should be deep. Sufficient to keep down weeds and maintain a mulch of loose earth on the surface is enough; because the space between the rows soon gets filled with lateral rootlets which should not be damaged, and deeper tillage than is absolutely necessary is therefore undesirable.

The next operation, a crucial one, is the thinning out of the plants. It is of very great importance that this be not only well done but done while the plants are small. The correct time is said to be when the plants have four leaves and the third pair beginning to appear. At any rate, start as early as possible, and when the plants are much smaller than turnips ready to single. It is a common mistake to be too late in starting to single out the stand of plants, as the plants come on very fast, and belated singling can reduce the yield by tons per acre. The ideal of spacing for horse work is

probably 18 inches between the rows and 9 inches between the plants. This will give a stand of 38,900 plants per acre, as against 29,000 for 24-inch rows, thus giving a balance of 11,900 in favour of 18-inch rows. The close stand of plants makes full use of the ground much quicker, and it will take a lot of extra weight in individual roots on the wider rows to make up the balance. Besides, the larger roots from wider drilling may suffer in loss of sugar or sugar content.

Thinning is usually done by slapping or chopping out the plants from the row by a special hoe with blade about 7 inches long, and set for drawing rather than pushing, as is the practice in singling turnips. Pulling out about 7 inches and leaving 1 to 2 inches would be good work if the braird were good. Great care should be taken in slapping to leave a full complement of plants for the singlers to work on. Slapping should be followed immediately by hand singling. But if the braird is getting ahead too fast it will be better to put on the full staff to get through the slapping, as this gives some relief to the crowded plants. Slapping done by casual labour costs the writer 10s. per acre, and singling by women 19s., making the cost altogether 29s. per acre. The singling is done by the operator laying hold of a good plant in the bunch lightly by the finger and thumb of one hand, and clearing away all the rest of the plants by the other. This is the orthodox method of the experienced grower. But the writer tried another, which proved to be more efficient and slightly cheaper. Women workers were provided with very short-handled hoes, which they used in one hand to clear away the whole of the plants in the row for a space of 7 inches or 8 inches ahead, except a selected one, which they meanwhile protected in the other hand, thus doing both slapping and singling at one operation at a cost of 27s. per acre.

After singling, the frequent use of the horse hoe is very desirable. An early start should be made. This is only possible with a suitable type of horse hoe such as the one already described. Disc coulters are necessary for the early hoeing to prevent the soil from smothering the seedlings. After that a selection from a variety of duck-foot blades should be fitted according to the nature of the work, and the hoe kept going as long as it is possible without injury to the foliage. Very deep cultivation is hardly possible between narrow rows, but up to the time the rootlets take possession of the intervening space thorough cultivation is likely to benefit the crop. This hoeing not only cleans the land but it ensures a tilth that conserves soil moisture, which stimulates the growth of the plant in dry weather. It also favours the absorption of air and heat in the soil, both of which promote fertility. Many experiments have definitely demonstrated the beneficial effect of hoeing on sugar beet. Knauer

and Holbrung found that one hoeing gave 6 tons per acre, two hoeings $7\frac{1}{2}$ tons, three hoeings $9\frac{1}{2}$ tons, four hoeings $11\frac{1}{4}$ tons, and five hoeings $11\frac{3}{4}$ tons per acre. After singling, one careful hand-hoeing and at least three or four horse-hoeings, according to the state of the land, appears likely to be profitable. The writer has frequently seen sugar beet growing abroad, and in going up and down the country at home is inclined to think that in many cases comparison is rather against us in the matter of keeping this crop free of weeds.

HARVESTING.

Growers in Scotland suffer from late harvests, a disability that has serious repercussions on sugar beet culture. The end of September is usually given as the time to start to lift this crop, but even were the crop ripe then, which it is not in Scotland, in few districts will the corn harvest be finished at that time; and this has to be followed by potato lifting, which on most of the land suitable for sugar beet is a big job, frequently extending to the beginning of November, and then wheat sowing is urgent. In fact, the inroads of sugar beet on the farmers' time last year is this season responsible for a good deal of bad wheat. The writer has grown sugar beet more or less every year for the last nine years, and his experience is that it is seldom ripe for harvesting until the end of October. If taken too early the sugar content is low, and if too long delayed sugar is lost. But the worst feature of belated harvesting is the extra expense due to adverse climatic conditions. In addition to the sheer impossibility of doing the work well, the cost may go up 50 per cent. Apart from this disability, there is little danger from late harvesting, for the crop does not readily spoil by frost so long as the beets are left in the soil. Once lifted, however, they can be seriously damaged. Frosted sugar beets may not only be lost from fermentation, but on being mixed with others at the factory may cause trouble there.

Sugar beet roots have a firm hold of the ground, and cannot as a rule be pulled by hand until they are loosened by a sugar beet lifter. There are several special ploughs on the market suitable for this purpose. These ploughs do the work by ripping up the soil like a subsoil plough alongside the row of roots. The breast requires to be long so that the beam is well above ground, providing clearance for the shaws which in wet weather are liable to collect on it, and at the lower end of the breast, extending like a ploughshare, is a shoulder that slightly raises the row of plants. By this means the beets are left standing loose and free in the soil ready for the workers to lift and clean them. This ploughing is heavy work for a pair

of horses, and with 18 inches to 20 inches between the rows about two acres is a day's work. The loosened crop can await the convenience of lifting operations. Indeed, some little delay is said to promote ripening, and if the weather is dry shrinkage makes the earth more easily shaken from the roots.

The pulling is done by hand. The workers take a plant in each hand and knock and rub the roots together until they are free from soil. Thorough work here is desirable, otherwise the loss from heavy tare will be serious. The plants are then laid down neatly in rows at right angles to the line of work, and another set of workers follow chopping off the tops with a special cleaver or heavy tailing hook. Here again careful work is required in order to get the best results. The tops must be evenly chopped off so as to remove the foliage and the rough greenish crown. Crowns are not wanted at the factory; and if they have not been properly removed in the field they are cleaned off at the factory, thus bringing about a loss of weight that falls on the grower, whereas if kept at home they are not only of high feeding value but they keep the tops alive and fresh much longer, thus enhancing their value as food for stock.

The separation of the tops should be made in a straight line across the crown of the beet as indicated in Fig. 1, and is best done when the plant is lying flat on the ground, hence the need for laying them carefully in rows after cleaning. The roots may be thrown into heaps or into baskets, and are now ready to cart to station or factory.

Another method of lifting, particularly on stiff land when wet, has been successfully adopted by Mr J. R. Dale of Scoughall, a large-scale grower. This is to yoke two single ploughs, with horses going tandem, and make them work behind each other round a stretch of rows so that they plough away the soil from the rows of beet. The roots can then be easily pulled from the side of the open furrow and laid on the top of the ploughed land. By this method the roots come out much cleaner from stiff land when wet than by the other method. The workers are ranged out on equal stents or stretches after the manner of potato lifting. Each worker being on her own stretch is stimulated to diligence, and individual supervision is easier.

TABLE OF OPERATIONS AND COST.

Little now remains to be said beyond giving an outline of the operations and their cost. These, of course, vary with circumstances, and the amount put against the effective working day of horses and regular farm hands. In such

calculations there is a tendency to understate this expense. Here men are put at 8s. per day, horses 5s., and upkeep of implements per pair of horses 2s. per day, making £1 per day for a pair of horses and man :—

Ploughing deep by tractor, per acre . . .	£1	0	0
Lime, 10 cwt. ground lime	1	5	0
Harrowing (single)	0	1	3
Discing (tractor)	0	6	0
Manure, 10 cwt.	3	10	0
Harrowing and rolling	0	2	6
Cultivating	0	6	0
Harrowing and rolling	0	2	6
Cultivating	0	6	0
Harrowing (double)	0	2	6
Rolling	0	1	3
Harrowing (Parmiter harrows)	0	1	3
Seed and Sowing (16 lb. at 6½d. per lb.) . . .	0	12	0
Rolling	0	1	3
Harrowing (Parmiter harrows)	0	1	3
Collecting stones	0	2	0
Horse-hoeing	0	3	0
Singling	1	9	0
Top-dressing	0	12	6
Horse-hoeing twice	0	6	0
Hand-hoeing	0	10	0
Top-dressing	0	12	6
Horse-hoeing	0	3	0
Taking out bolters	0	2	0
Lifting and carting to station	6	0	0
Rent and taxes	3	10	0
General expenses	0	8	0
	£21 16 9		

The cost of harvesting, carting to the station a distance of about two miles, and return from the factory was ascertained in 1926, and confirmed in 1927, by making a strict record of all costs for 3½ acres. The details were as follows :—

16 hours, man and 2 horses, beet raising, at 2s. 3d. per hour	£1	16	0
426 hours, women labour, at 5½d. per hour	9	15	3
Supervision of women, and loading carts, 2 men 3 days at 8s. per day	2	8	0
Carting to station, 57 loads at 3s. 4d.	9	10	0
	£23	9	3
=£6, 2s. 7d. per acre.			

The actual weight of washed beet was 45 tons 17 cwt. 1 qr. 7 lb.; the average percentage sugar, 18·1; and the net return from factory, £129, 10s. 7d.

These figures in 1926 gave approximately a yield per acre of 12 tons 5 cwt., which realised, net from the factory, £34, 8s. After deducting the cost of growing, the net return amounted to £12, 12s. per acre. In 1927 the sugar content dropped to 17·2 per cent, the yield to about 9 tons per acre for 30 acres, part of which was damaged by a sandstorm, and the return from the factory amounted to £24, 7s. 6d. per acre, thus leaving only a small margin of profit. Returns similar to those obtained in 1926 would yield, for the current season, on the basis of Lord Weir's f.o.r. offer, to about £3 per acre less. The latest price offered is carriage paid to the factory and the return will vary with the amount of railway carriage the grower has to pay. In East Lothian it will mean, on the basis of a 12-ton crop, a further loss to the grower of about £3 per acre. Therefore, unless we can maintain the average yield somewhere between 11 and 12 tons per acre, sugar beet growing under present conditions is not likely to be worth while.

A great deal has been written about the value of the sugar beet tops as food for stock. There is universal agreement that they are of considerable value for cattle and sheep feeding. Their value has been put at, at least, £3 per acre, but when dung is not counted against the sugar beet crop, as in the above calculation, then it seems reasonable that the value of the tops should be put against dung, which, although not applied directly to the crop, will nevertheless be a proper charge against growing the crop.

Another small advantage which the grower of sugar beet has is being able to get a supply of sugar beet pulp, either wet or dry, direct from the factory at a special rate. Undoubtedly this is a useful feeding-stuff, but it is beyond the scope of this article to deal with the feeding value of either sugar beet tops or the pulp.

INSECT AND OTHER INVERTEBRATE PESTS IN 1927.

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SNAILS AND SLUGS.

DURING the past three years—doubtless to some extent due to abnormally wet weather—repeated statements have come to me reporting damage to garden, allotment, and field crops by Slugs, and information on remedial treatment has been



Fig. 17.—*Agrolimax* left in Laboratory at night, covered over, and found collected on leaf next morning when the cover had been removed for examination.

From nature. Reduced in size.

asked. The chief culprit was the Grey Field or Garden Slug (*Agrolimax agrestis* L.) (Fig. 17), but other species are involved. Of the numerous different kinds of British land Snails and Slugs, the very troublesome forms number six or eight to twelve, and of these the Grey Field Slug is the most harmful;

the Snail most harmful to plants is probably the Large Garden Snail (*Helix aspersa* Müll).

Classification.—Slugs and Snails belong to the group of Mollusca, soft-bodied animals without appendages, some living on land, and others aquatic. A great characteristic is a muscular protrusion of the under surface known as the "foot," ploughshare-shaped in the mussels, flattened out in the Snails and Slugs, and broken up in the aquatic cuttlefishes into a series of sucker-bearing "arms." Typically also a fold of the body-wall forms the "mantle," which secretes two shells in the mussel, cockle, oyster, clam; or one shell as in the snail and buckie. Mantle and shell may both be absent. While the sexes may be separate, Slugs and Snails are hermaphrodite, but the animals meet and pair, so that fertilisation is cross-fertilisation. In many species—the aquatic species markedly—the development is indirect, larval stages differing in appearance greatly from the future adult being passed through, but in the case of our noxious land forms there is no metamorphosis. From the egg there hatches the young recognisable Snail or Slug, which attains the adult form after a time of feeding.

Of the three main sections into which Molluscs are divided, Slugs and Snails belong to the section Gasteropods (=belly-footed), which have a well-developed head, a flat creeping foot, a rasping file or ribbon for breaking up food material, a more or less unsymmetrical body (think of the twist of the Snail in its shell), and a single shell; the shell is greatly reduced in Slugs, and may be absent. In the Gasteropod section we have both aquatic and terrestrial species. Some of the water snails have great economic importance. A *Limnaea* acts as the intermediate host of the liver fluke of the sheep; and in the East and the Tropics other water snails serve as intermediate hosts of the so-called blood flukes of man (the cause of Bilharziosis), and of lung flukes. The whelks or buckies are well-known marine Gasteropods.

The Snails and Slugs harmful to crop plants are land forms, and, broadly, may be distinguished as, possessing a shell, and, lacking a shell. The shell of a Snail is secreted by the mantle, which is the covering of the body lining the inner surface of the shell. The shell has three layers—an outermost softer layer that can be rubbed off, a middle porcelain-like region, and an inner pearly layer. This last is secreted by the general surface of the mantle, but the other two layers are only formed by the front end of the mantle—i.e., by the part behind the "collar," which is the swollen thick part seen all round the lip of the shell. One must think of the shell as a portion of the animal organically connected with it, and not just as a covering house which the Snail can leave at will. Snails, then, are characterised by the spiral shell, which

in *Helix aspersa* (the Large Garden Snail) has four and a half to five circles or whorls. In Slugs there is no evident external shell; but under the skin, hidden within the mantle or shield, a rather thin delicate plate of lime will be found; this, in the Grey Field Slug, measures 4 mm. by 2 mm. In the Garden Slug and the Large Black Arion the shell is only represented by a few limy particles. In the genus *Testacella* we have a greatly reduced shell, visible to the eye as a little plate on the upper surface at the hind end of the body.

The Genus Testacella.—This genus has interest for us because of the carnivorous habit. There are three British species¹ which look like Slugs, but are recognised by the small external shell and by the narrowed head end. Their food consists partly of other small Slugs, but chiefly of earth-worms, which are caught on the recurved teeth of the rasp or file (see below). Sometimes the caught earth-worm withdraws to the shelter of its burrow, only to be devoured at leisure by the *Testacella*.

Some Features in the Structure and Habit of Life of Snails and Slugs.—The head carries two pairs of tentacles—hollow, retractile at will, and able to be regrown if injured or lost. The longer pair have eyes at their end, but sight is not one of the keen senses. The long and short tentacles are both sensory. Touch and smell are well developed; a Slug will move directly to food placed some distance away. Experimentally a homing instinct has been indicated in Snails, which have been found to return to favoured shelter-places. On the under side of the head is the mouth with two lips, which may function in taste; there is also an upper horny jaw. On the floor of the mouth is a horny ribbon—the radula or rasp; on this file are many transverse rows of backwards-directed hard teeth. This radula or file is supported on a pad of cartilage, and by means of muscles it is worked backwards and forwards, and partly upwards and downwards, so that food drawn into the mouth and scraped off and held by the upper jaw is grated. As the rasping ribbon wears in front, it is added to behind, in a small sac on the floor of the mouth cavity known as the radula sac.

Breathing.—In the species we are dealing with, a small opening, differing slightly in position in different Snails and Slugs, on the right-hand side of the mantle margin, admits air to a lung cavity. Blood vessels in the roof of the mantle or shield are supplied with oxygen, and the blood so purified is passed to a two-chambered heart for distribution to the body generally.

¹ 'Monograph of the Land and Freshwater Mollusca of the British Isles' (Leeds, 1894-1921), by J. W. Taylor. 'British Snails: A guide to the non-marine Gastropoda of Great Britain and Ireland,' by Arthur Erskine Ellis. The Clarendon Press, Oxford.

The Skin and Slime.—The skin is glandular, and gives out quantities of mucus, so that the whole body can be bathed in it. This slimy mucus has great importance. It is an aid against over-evaporation. Water is of great importance in the life of a Slug. In continued drought and heat these Molluscs pass into a resting sleep condition, hiding away in shelter-places under rubbish, or scooping out cavities in the soil. In such places they lie up until the return of moist conditions. This sleep condition in drought periods corresponds to the so-called hibernation or sleep condition in the winter, when the Snail and the Slug can withstand very low temperatures, lying buried in the soil or ensconced in some other shelter-place in a condition of marked contraction. Snails have the additional advantage that they can withdraw under cover of the shell, the mouth of which is closed by a lid of slime plus lime that dries into a hard plate more or less porous. Several such protecting plates may be formed. These limy plates are thrown off when active life is renewed on the return of water and heat in spring, or of water in summer. During such resting periods the living processes are reduced to a minimum, and the animal seems as if it were dead. One of the advantages of the grooves and furrows so common on the skin of Slugs is that mucus can be held there, and so moisture retained for a longer time even in drying conditions. All farmers and gardeners have noticed how Slugs are more or less nocturnal, and this habit is partly associated with the Slug's dislike of conditions making for drought. Of great practical importance is this relationship between Slugs and Snails and water, for the grower will expect invasion and attack in hot weather and after heavy rains following drought. This serves as a guide when protective and remedial measures are being practised. The connected fondness of Slugs and Snails for sheltered positions in hedgerows, in shady nooks, in woods, under fallen leaves, in rank weeds on waste land, under collections of refuse, should not be lost sight of when collecting is being practised or when prevention is desired. Another advantage of the giving off of mucus by the skin, is that the mucus serves as a protection against enemies. On being irritated the Slug gives off copious slime. It is this power which can render a dressing with an otherwise noxious material harmless. Lime, soot, a mixture of lime and soot, salt, are all materials in common use against these Molluscs. That they are often reported as of no avail is due to the fact that the Slug, on being touched by the particles, secretes slime, which entangles the particles of the dressing, and the Slug crawls away unharmed. This out-pouring of sticky mucus has limits, and a second dressing quickly following the first might easily have proved successful, the Molluscs having lost temporarily their ability to

secrete mucus in quantity. It is this necessity for a second dressing that makes the application of certain otherwise useful materials impracticable because of labour and expense. Sometimes barriers of protective material laid round plants, or areas bearing plants, fail because not sufficiently broad or deep.

Apart from the Slug's or Snail's protective slime, there may be a less glutinous mucus given off from a gland associated with the "foot" of the Snail or Slug. This slime serves as an aid in progression, and such slimy track left behind by a Snail or Slug is very familiar. I have traced such an enemy that had entered a room by a window to its hiding-place in a dark corner by the slime-track leading from the place of entry.

The flattened foot is very muscular and extensible, and if a Snail or Slug be made to walk on a piece of glass, a series of muscular waves may be seen to follow one another in quick succession from behind forwards.

Pairing, Egg-laying, and Development.—It has been already stated that the same Slug or Snail has both male and female reproductive organs. Still fertilisation is not self-fertilisation. Two forms meet, and the sperms of one are passed to the other to be stored, it may be until the eggs are ripe and ready for fertilisation. One does not easily associate dalliance, or courtship exchanges and courtesies, with Snails and Slugs. Yet here is a record of emotional excitement,¹ as observed between two Roman Snails (*Helix pomatia*) on a warm July morning after rain, but in sunshine: "One Roman Snail was approaching another; both had the front part of the foot bearing the head slightly raised, and the rest of the body was somewhat contracted. Their tentacles or feelers were rigidly erect, like the ears of listening dogs. They came straight towards each other. When they met, they each applied the sole of the raised foot to that of the other, extending it to its full length. In this way the heads are raised vertically high above the ground, the posterior extremity of the foot of each Snail being spread out, forming a broad base. Now the excitement seemed to be intense, the tentacles quivered, and all were bent towards the partner, touching and feeling. They rubbed each other with their sensitive and mobile lips, and seemed to lick each other. At the same time they glided up and down each other with a caressing movement. The lung opening was widely dilated, indicating rapid respiration. After a period of ten to twenty minutes the animals seemed to be exhausted, and crouched back into their shells, but without releasing each other. After a short rest their ecstatic movements were renewed. Feverishly their tentacles bent and turned, and their bodies glided and

¹ 'Living Creatures,' by C. von Wyss, p. 335. A. & C. Black, Ltd.

swayed. The margins of the genital openings below the upper tentacles were swollen, and part of the genital organ protruded. At this stage the love darts were liberated,¹ obviously intended to wound the partner, but often falling to the ground. After another short rest, and again accompanied by emotional movements, the act of fertilisation followed." (Fertilisation here means the exchange and passing over of the spermatozoa, and not necessarily at the moment the fusion of these with the eggs.)

In the case of the Arion Slugs, Ellis² says that when about to pair one Arion overtakes the other, and begins to eat the slime exuded by its caudal mucous gland³; the other one turns round and does the same, "and so a slow circular procession commences. After this has gone on for a considerable time, packets of sperms are exchanged."



Fig. 18.—*The Grey Field Slug and its damage to potatoes.*

From nature. Reduced.

For egg-laying the Snail or Slug may enter the soil, or with other Slugs the eggs may be laid in shelter under some protecting structure. The eggs are rounded, and are laid in groups, those of the Snail being white, with a delicate limy shell, while the Slug's eggs have a glassy or pearly or milky appearance. They are often laid in spring or early summer; but while there can be some differences in time varying with the species, it may be stated generally that mating and egg-laying can be repeated, with eggs being laid at any favouring period. Their reproductive capacity favours these Molluscs in the struggle for existence, and there are some remarkable

¹ Snails in pairing discharge little spicules or darts of lime coated with mucus—known as Cupid's darts—at one another. Each dart in the case of the Roman Snail is sharp at one end, while the other end is swollen and carries fine teeth.

² 'British Snails,' by Ellis, p. 175.

³ Slugs of the genus *Arion* have a special mucous-secreting gland at the hind end,

records of egg and adult being able to resist severe conditions. In favourable environment eggs hatch in three weeks or a month, and the young Slugs grow quickly.

Many different crop and garden plants are used for food purposes. The complaints that have reached me refer chiefly to Slug damage to potatoes (Figs. 18 and 19)—“of 2½ acres attacked after maturity, less than a half of the crop remains sound”; to Cruciferous plants—*e.g.*, Savoy and Brussels Sprouts—“over a large area one-third of the young plants destroyed”; and to young cereals (Fig. 20).

Of the forms named above a descriptive paragraph may be given on each.

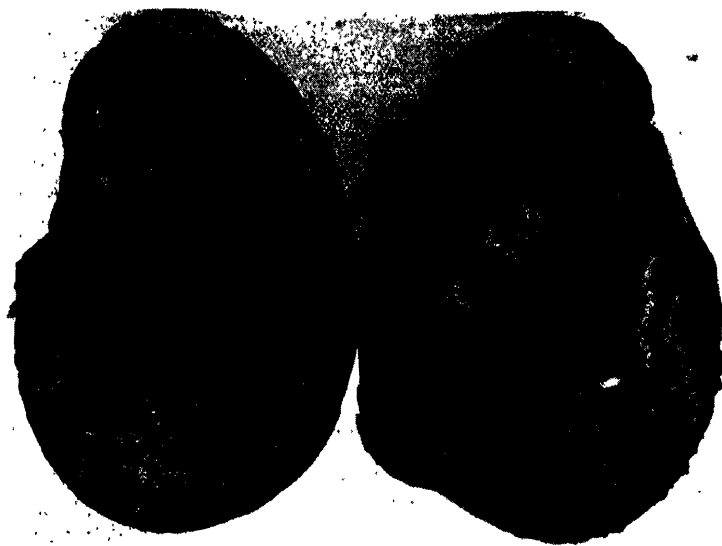


Fig. 19.—Damage to potato by the Grey Field Slug.

From nature.

The Roman Snail (*Helix pomatia*) is by much the largest of our species. It is found in a number of different areas in England, and is probably a native, though some hold its introduction as due to the Romans. It is the edible Snail *par excellence*. The Romans found them a dainty after the Snail had been fed on wine-soaked bran. *Helix pomatia* is common on the Continent, is in demand during Lent, and figures in French restaurants as “Escargots à la bourgogne.” This is the Snail used in our laboratories for dissection.

The Large Garden Snail (*Helix aspersa* Müll) is common

from Moray southwards. The shell measures $1\frac{1}{2}$ in. in height, and is grey-brown or fawn-coloured, with brown marbling; the external surface is coarse. This Snail is sometimes used for food.

The Grey Field Slug (*Agrolimax agrestis* L.) (Fig. 17). The body is elongated, and measures $1\frac{1}{2}$ to 2 in. in length when extended; on the upper surface anteriorly is the mantle or shield which, lined and furrowed, extends for about a third of the length of the body, and is rounded at each end. The respiratory opening, marked by a prominent cleft, is near the



Fig. 20.—*Leaves of wheat and oats eaten by the Grey Slug (Agrolimax agrestis).*

From nature. Half natural size.

hind margin of the shield a little to the right-hand side, and is surrounded by a white raised ring. The general colour of the body is pale yellow (there are colour varieties), the surface showing a dark netted pattern. The tentacles are dark. The sole of the foot is white, and is divided longitudinally into a middle and two side parts. Concerning this Slug, Ellis¹ writes: "It is the commonest and most ubiquitous of our land Molluscs, living in every possible situation, in woods, fields, gardens, pastures, downs, moors, marshes, heaths, in dry or moist places indifferently, but is especially plentiful

¹ 'British Snails,' p. 256.

on arable land." Taylor,¹ in his monograph, says that the Grey Field Slug can reach sexual maturity in three months, and perhaps lives for eighteen months.

The Garden Snail (*Arion hortensis* F.), a small, narrow, and elongated dark-coloured Slug, paler below; skin leathery and tubercled; shield coarse, with the respiratory opening about a third down the right-hand side.

The Large Black Slug (*Arion ater* L.). This large handsome Slug is typically black, with the sole pale; but there are numerous varieties—brown, red-brown, yellow. The skin shows rows of tubercles; the shield is oval and rough; the body is stout and when the Slug is contracted suggests a half-circle.

Treatment.—Part of the want of success in fighting Slugs has been due to forgetting that remedial measures should be practised at night, or at nightfall, or daybreak after rain. It is at these times, and chiefly at night, that collecting will be successful. The darkness, of course, is the difficulty, but a bright light must be carried or arranged for.

Trapping.—On a large scale this becomes laborious, because many traps have to be laid, especially where favourite food plants are in question, and these must be regularly visited. The traps may be boards left lying, or crocks or tiles or some other "refuge" either alone or with some bait in addition, like lettuce or cabbage leaves dipped in fat, or pieces of carrot or bran or orange skins.

Repellents or Deterrents.—Some of the commonly used deterrents, like soot, lime, salt, and other not such well-known substances, fail because when rain comes the deterrents are either spoiled, or to a considerable extent spoiled, and it is wet which encourages the Slugs to come out for feeding. It has also been pointed out earlier how irritants may be thrown off in the exudate of mucus, so that salt or lime would require to be sprayed a second and a third time on the same night. A good satisfactory repellent is Bordeaux Mixture.

Poison Baits.—On an extended scale the spreading of poisoned baits cannot be practised in the open, and there is the additional drawback that rain may easily render the bait inoperative. Further, Slugs and Snails can exercise selection.

Combination of Repellent and Poison Bait.—Lovett and Black,² in their experiments against the Grey Garden Slug and allied species, found this combination of repellent and poison bait effective. Bordeaux Mixture, 4:4:50, sprayed on the plants, combined with the use of the poison bait,

¹ 'Monograph of the Land and Fresh Water Mollusca of the British Isles.'

² 'The Gray Garden Slug,' by A. L. Lovett and A. R. Black. Station Bulletin 170, June 1920. Oregon Agricultural College Experiment Station.

calcium arsenate, 1 part to 16 of chopped lettuce scattered in small heaps over the infected area.

The Most Successful Experimental Dressings as Powder or as Liquid.—Mr W. E. H. Hodson, A.R.C.S., F.Z.S., Seale-Hayne Agricultural College, using various powders and liquid dressings against Slugs placed on damp sand in large closed vessels, the treated Slugs being watched afterwards, chose two as lethal to the Slugs—viz., sodium fluoride and aluminium sulphate. The sodium fluoride in fairly strong concentration proved distinctly lethal to the Slugs, but had a severe scorching effect on the foliage with which it came in contact. It was not found possible to get a working strength of sodium fluoride that would kill the Slugs, and yet be harmless to the leaves of the treated plants.

Aluminium sulphate, written favourably of by various writers in the 'Gardener's Chronicle' as used against Slugs, gave some measure of success in Hodson's experiments against the Slugs. When used as a powder a second application proved fatal, and a 10 per cent solution very lethal. But aluminium sulphate had severe scorching effects on the plants, and at less concentrations plants with tender foliage were still harmed. Further experiment, however, resulted in this difficulty being overcome by the admixture of lime; the addition of lime, while reducing the liability to scorch, did not detract from the lethal effects on the Slugs. The most convenient strength was 1 lb. sulphate to 5 gallons of a saturated solution of lime in water. In making, take 1 lb. good quicklime and add to it 8 gallons of water. Allow to slake. When quite cold, run off the clear lime water from the excess of lime, which has sunk to the bottom of the vessel. Then dissolve 1 lb. of aluminium sulphate in 1 gallon of water. Mix the two solutions. Strain the mixture through a fine mesh. Wet thoroughly the soil below and around the plant. Spray the plants shortly after sundown or after a shower of rain. A drawback is that rain will necessitate a repetition of the spray. A preliminary experiment with the plants intended for treatment is advisable.

Copper Sulphate, Kainit, and the Leeds Experiments.—In the United States copper sulphate had proved fatal to Slugs used as a powder or in solution. Thus Lovett and Black¹ found copper sulphate fatal to Slugs when applied externally at strengths from 1 to 10 per cent in water. Slugs so treated showed great distress, exuded protective slime abundantly, and died within twenty-four hours.

Mr A. W. Anderson, experimenting at Leeds University, used a 3 per cent solution of copper sulphate, applied, at the rate of 50 gallons to the acre, by means of a horse machine

¹ 'The Gray Garden Slug,' by A. L. Lovett and A. R. Black. Oregon Agricultural College. Station Bulletin 170.

giving a fine mist. This experiment was done in spring, therefore there was the risk of damaging the young crops. Mr Anderson could find no damage to the oat crop, winter wheat did not suffer, and winter beans showed only a slight scorching on the leaves.

Experimenting with various dry powders against small numbers of Slugs to test results, the best results were got with copper sulphate and with kainit. Mr Anderson, as in the Oregon experiments, found copper sulphate to be very efficient in its effect on the Slugs. On being touched with the copper sulphate, the Slug exuded in quantity thick sticky mucus, and then rapidly showed writhing movements that ended with inability to crawl, and death.

As a result of some experiments on a field scale, Mr Anderson finally recommended as most satisfactory a mixture of finely ground copper sulphate and commercial kainit in the proportion of 5 lb. finely ground copper sulphate, 1 cwt. of commercial kainit.

Where one uses copper sulphate that may be sprayed or dusted on plants or kainit, one keeps in mind that there is a certain risk of harm to the plant. Some plants are more susceptible to injury than others. Cruciferous plants are specially sensitive. It is advised, then, that in fighting the Slug pest with the copper sulphate and kainit in the proportions recommended, there should be a preliminary test on a small number of the kind of plant that one purposes to treat in mass. I am able to report satisfactory results without harm to the plants in experiment on an eight-acre area, the plants being chiefly young Cruciferous transplants. Tentatively 200 square yards were first treated, and in the morning over 600 dead Slugs were got. The rest of the area was treated the next night, and the morning broke "with dead Slugs lying about everywhere." The dressing must be given at night, after dusk. The light for the above night treatment was supplied by motor headlights being turned on, a motor-car having been run to the area for the purpose. The projected beams of light revealed the Slug population moving about and at their fell work.

It may be added that young ducks take Slugs very willingly. It is a pity that this helpful habit of the duck cannot be taken full advantage of, as ducks themselves are no resisters of young plants.

EAR COCKLES, PEPPER CORNS, OR PURPLES IN WHEAT.

This disease of wheat, characterised by the appearance at harvest time, in the ears, of hard dark-coloured bodies shorter but thicker than grains of wheat, is due to a minute worm, named *Tylenchus scandens* or *tritici*, a member of the family

of Eel-worms. Information is desired as to whether this disease, well-known in parts of England, is present in Scotland, and, if so, to what extent. This note, with the accompanying figures, will enable the pest to be recognised. Fig. 21 shows the galls or swellings in the ear. These dark-coloured bodies are sometimes confused with ergot grains or sclerotia—hence one name for the disease, False Ergot,—but they are much shorter, and entirely different in structure. A true ergot sclerotium is spur-like, and made up of compacted fungus mycelium, whereas the *Tylenchus* galls are swellings crowded with minute worms, it may be in all stages of development. The common name Ear Cockle for the *Tylenchus* galls is from the suggested resemblance to the seeds of Corn Cockle, a weed of the chickenweed and spurrey Order. Bunt of wheat, also sometimes confused with Ear Cockle, is due to a fungus, the diseased dark-coloured grains containing masses of fungus spores.

The *Tylenchus* galls (Fig. 22) are diseased swellings due to attack not only on the grain, but on other parts of a wheat flower. When wheat grains containing in the sample Ear Cockle galls are sown, then, in the presence of moisture, the galls are softened, and the young worms escape in hundreds. These worms move to the seedling and young wheat plants and collect between the leaf-sheaths, and then reach the young flowers, where their irritating presence gives rise to the swellings. Adult worms, eggs, and young in various stages, are all found in the gall. The worms are microscopic in size. A feature of these eel-worms is their great vitality. Galls can be kept dry for prolonged periods without worm mortality. In the early stage of the disease, and long before the galls are prominent in the ears, plants invaded by the worms can be recognised by the wrinkled twisted upper leaves. Later the ears are shrivelled in appearance, with fewer and poorer grains.



Fig. 21.—Ear of wheat showing the dark-coloured galls due to *Tylenchus scandens*.

From nature.

THE OX WARBLE FLIES.

Observations were continued during the season as to the presence of the larvæ on the backs of cattle, and some experi-

mental work was done. The observations were made in Lanarkshire, Perthshire, and Peebles chiefly, and it was brought out that both *Hypoderma lineatum* and *Hypoderma bovis* are actively at work. In the East Lothian experiments, one may remember that some discouragement arose from the fact that, although the farmer treated his cattle so as to destroy the Warble larvæ, he was just as badly off in the following season on account of new supplies of Warble larvæ introduced in cattle from Ireland. In the counties where observations were made in 1927, the warbled cattle, owing to a different type of farm-

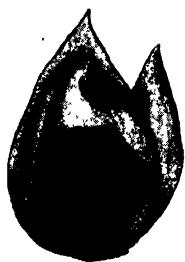


Fig. 22.—*Floret from ear of wheat showing gall.*

Magnified.



Fig. 23.—*Tylenchus scandens*

Greatly magnified.

ing, had not been brought in in quantity from Ireland, but were to a great extent cattle that had been grazed in the neighbourhood or not far away. The record may be stated thus :—

County.	Dates of Examination.	Cattle treated.	Grazed at home.	No. of Warbles.	Grazed in Ireland.	No. of Warbles.
Perth .	April 24 to May 12	24	18	73	6	13
Lanark .	„ „	18	18	62	0	0
Peebles	„ „	25	25	131	0	0

The predominantly arable farmer of, say, East Lothian or Fife, not rearing his own stock, having no land to spare for grazing in the summer, and buying in autumn to feed off his own turnips and straw, may object that the dressing of his bought-in cattle against Warble will not result in a progressive diminution of the fly, because he has to buy in the next autumn from, say, Ireland, cattle that are already infected. A reply to this, of course, is that attempted annihila-

tion of the Warble Fly must be a general undertaking. On the other hand, where the farming is not predominantly arable, and where stock are reared to a considerable extent and grazed where reared, it is to be expected that Warble maggot destruction, consistently practised, must result in the diminution of the fly.

I have already proved in past years that *H. lineatum* is earlier than *H. bovis*, but the following new records may be quoted—

Date of Examination.	Hypoderma lineatum.		Hypoderma bovis.	
	2nd last stage larva.	Last stage larva.	2nd last stage larva.	Last stage larva.
24.3.27	26	2	—	—
28.3.27	43	2	—	—
29.3.27	24	7	4	—
30.3.27	34	2	1	—
7.4.27	26	—	6	3
5.5.27	38	—	5	2
10.5.27	24	—	9	—
12.5.27	—	—	17	1

From a Canadian beast at Dundee four larvæ were taken on 7th March; all four were *H. lineatum* in the last stage.

Two dressings of service against the larvæ were tested, and both gave averagely good results. The first dressing tested was one in great favour in Denmark—viz., Hypoderma oil. This costs £5 per gallon, but a little goes a long way. It was injected, by means of a syringe, at the opening into the Warble, the hole being first cleared. Three, sometimes four, days later the treated Warbles were examined, and the larvæ squeezed out. While Hypoderma oil did not do all the advertisements claim for it, it can be recommended. It had its greatest success against the younger larvæ. Last-stage larvæ, nearing the end of their larval life, were much more difficult to kill. The squeezing out of dead younger larvæ was often difficult, as they burst so easily. Treated cattle did not suffer in health, and there was no falling out of hair. Mr D. Stewart MacLagan, B.Sc.,¹ to whom I am greatly indebted for his work and observations, gives his experience as follows: "The dressing has a decided and strong odour resembling that of certain antiseptics, but cannot be called objectionable. However, if it came to be used in milking herds (which is unlikely), the careful dairy-

¹ I desire also to thank Mr J. Y. Walker and Mr Thomas Muir for willing and interested help.

man might object to the odour, as he does to that of strong carbolic dip. As to the effects on the cattle, where less than four Warbles were dressed the animal exhibited no signs of the effect of the oil. In nearly all the cases where four or five Warbles were dressed, the animal indicated that it was at least feeling the presence of the oil. Such behaviour consisted sometimes in tossing the head up and down and attempting to lick the dressing, sometimes in stamping and lifting up the forelegs, and occasionally in lying down. The extent of the irritation was not serious, and apparently consisted simply in a temporary smarting of the skin, which passed off in five to seven minutes after the dressing had been completed. No after-effects, such as falling out of the hair, were encountered." Sometimes one hears it said that Warbles do not matter for cattle, but the lean, staring-coated, ill-conditioned state of animals suffering from mass infestation cannot be gainsaid.

Another dressing favoured in America was tested—viz., an ointment made up of 1 part of iodoform to 5 of vaseline. This ointment is placed over the opening into the Warble, the hole again being first cleared. The results were satisfactory.

We gave the Brodersen pump, a small suction pump patented by Brodersen, a veterinary surgeon in Denmark, for the extraction of the Hypoderma larvæ from the Warbles in the back, a fair trial. It proved of little use.

THE WHEAT BULB FLY (*Leptohylemyia coarctata*).

A little after the middle of April young diseased wheat plants came from an Experimental Station. The plants on dissection revealed in the very centre of the young shoot the larva of the Wheat Bulb Fly. Two experimental plots of wheat had been so badly thinned by this enemy that the plots had to be ploughed up. Periodically this pest, both in Scotland and England, is the cause of extensive damage to young wheat, and as a result of consequent intensive work on the fly we have now a fairly complete knowledge of its life-history, interesting features being the laying of the eggs on uncovered land, and the length of time that may elapse before they hatch. From amid the mass of detail as to conditions under which the Wheat Bulb Fly proves very harmful, two factors have importance—viz., the nature of the crop preceding the wheat, and—though this is not quite so definite—the nature of the weather in the summer months, and especially in late July and the month of August, when the egg-laying is at its height.

As regards the nature of the crop preceding the wheat

crop, reports from all centres of damage have made it evident that damage is worst where, for any reason, according to the farm rotations of different parts of Scotland and England, there is uncovered land during the latter part of the summer, such bare land being chosen by the flies for the placing of their eggs. A general summary from my notes would be, "Worst after bare fallow, worse after potatoes than after turnips, worse after early potatoes than late—in a word, worse where the soil is bare or exposed during the summer." The late Professor Gemmill wrote in the 'Journal' of the Board of Agriculture for Scotland, Vol. vi., No. 2, "The parts of a field worst damaged are usually those in which the shaws of the previous year's potatoes left much bare ground between them, or withered early, or were early dug up."

Regarding weather influence, Mr J. C. F. Fryer, the Director of the Pathological Laboratory of the Ministry of Agriculture and Fisheries, writes: "In 1921 comparatively few cases were reported, and there was no recurrence of the epidemic (of the year before). On the assumption that the weather during the period of oviposition is a determining factor in regulating the fly's abundance (apart from the presence of suitable 'bare' land), it is interesting to compare the weather charts for the Eastern District during July and August for the years 1919-20. Whereas July in each case was rather cold, wet, and sunless, August in 1919 was bright and hot, but in 1920 cool and sunless. The comparison suggests that August is the important month in regard to oviposition." Again, Mr F. Hiam, one of the largest Fen farmers, writes to Mr F. R. Petherbridge, Cambridge¹: "The Wheat Bulb Fly does not appear to do much harm in a wet, cold, or damp summer, but during a dry summer, say from 20th July to 29th September, on all bare lands where there is not sufficient top to keep the sun from the land, the Bulb Fly will deposit her eggs, and if wheat is sown it is sure to be practically spoilt when the eggs hatch in the spring. On wet lands or in a wet season the eggs do not seem to mature."

Life-History and Habits of the Fly.—The adult flies, their maggots, and pupa-cases have been well enough known to entomologists for a long time, but till recently the year's round of life of the fly has been uncertain. What remained to discover was how and where and in what stage or stages the insect spent the period from the issue of the adult flies in summer until the appearance of the maggot in the young winter wheat in the next early spring. We now know this interval to be spent in the egg stage in the soil. Gemmill² was the first worker to recover the eggs from bare soil and

¹ "Observations on the Life History of the Wheat Bulb Fly." By F. R. Petherbridge, in the 'Journal of Agricultural Science.' Vol. xi., Part 1.

² 'Nature.' September 30, 1920.

in potato fields, and Petherbridge¹ watched and described the laying of the eggs in soil provided experimentally in the laboratory. The fact that the eggs were laid in bare soil had been suspected for some time. Indeed, eggs had been found in soil by another worker, and described mistakenly as those of the Wheat Bulb Fly. That minute eggs should remain unharmed in soil for several months, including winter months, seemed to some unlikely, but the eggs of many insects are laid on plants in the open in late summer and in autumn, and are exposed to the rigour of winter, not hatching until the succeeding spring or early summer. Gemmill² states that the eggs of the Wheat Bulb Fly in the soil remain undamaged by heavy roller pressure, and that they withstood the action of strong brine, copper sulphate, and picric acid.

The Wheat Bulb Fly belongs to the family Anthomyiæ. It is a greyish or greyish-yellow fly, $\frac{2}{3}$ ths of an inch in length. A lens reveals numerous hairs and bristles; the narrow somewhat flattened abdomen has a dark line running down the middle of the upper surface. The flies issue from their brown-red pupa-cases in the soil in June and July, and some weeks of feeding are necessary before they can efficiently pair and the females proceed to egg-laying. Petherbridge, using flies bred out in the laboratory, placed them in a jar that held, in the bottom, sifted soil. The females were watched, and were observed to lay eggs, "the ovipositor being inserted to its full length in the soil." In another experiment, where sterilised soil was used, one part was left bare, one part had transplanted ryegrass in it, and the remaining middle portion was sown with wheat. The females laid eggs on the bare fallow and in the loose soil between the wheat plants.

Eggs are laid from June onwards to September. They are white and elongated, with one side rounded, the other concave; under magnification longitudinal ridges are seen. The eggs may not hatch till the following February. There must be variations, however, for I have taken Wheat Bulb Fly larvæ from dying young wheat plants in the months of November and December. These young plants came from England. It may well be that with such an extended period over which eggs can be laid there are differences in the time of hatching.

The maggot or larva from the egg enters the young wheat plant. The larva has been known for long, and was figured by the late Miss Ormerod. The full-grown larva measures

¹ "Observations on the Life History of the Wheat Bulb Fly." By F. R. Petherbridge, in the 'Journal of Agricultural Science.' Vol. xi., Part 1.

² "Wheat Bulb Disease." By Professor James F. Gemmill, in the 'Scottish Journal of Agriculture,' issued by the Board of Agriculture for Scotland, April 1923.

about $\frac{3}{4}$ ths inch or over. The head end is pointed, and carries the dark chitinous mouth-hooks by aid of which the larva cuts its way into the tissue of the young wheat plant. Just behind the head is a pair of spiracles, only to be seen by aid of the microscope. The hind end of the maggot is thicker and blunt. Round the margin of the hind joint there are nine projections, of which two, in the middle line of the under surface, are larger than the others, both forked or bifid at the apex. On the hind face of the last joint are two horny spiracles.

The maggot feeds in the heart of the young wheat plant, between the roots and the ground level. To find it one should remove the leaves from outside inwards one after another. The part actually attacked is the growing region immediately above the little swellings that give rise to the early leaves; this succulent swelling region is destroyed. Discoloration of the central leaf calls attention to the attack. The plant may die away. If the larva fails to get food enough in one young plant, it leaves and enters another.

In Scotland the maggots can be found in the wheat from February till May, when examination will show that many of the larvæ have completed their growth and left the plants. The farmer in an average season will find the likely time for attack to be at its worst from the last week of March to the middle of April. Whether or no an average crop will follow depends on the numbers of the enemy, on whether the season favours growth, and on whether there is compensation from tillering. When the larva is full fed it leaves the plant and enters the soil, where it pupates under cover of the last moulted skin, which becomes hard and dry, and turns to a brown-black colour. The resting pupal stage, during which the future winged insect is being perfected, lasts a month or over. By the end of June the new generation of flies will have started to come away, and the issue of new flies continues throughout July.

Plants Attacked by the Larva.—Wheat is the typical host plant. The oat is immune. Barley escapes, not because it cannot be a host plant, but because with us the larva has completed its feeding before the barley is ready. Petherbridge and Morris have both found the larvæ in winter barley and in winter rye. In the fields Gemmill took the larvæ in couch-grass, and in winter rye after potatoes; and in the laboratory he found that larvæ, removed from wheat, would enter couch-grass and barley and rye, and there complete their growth. The willingness of the larvæ to eat into and feed on couch-grass, not only the shoots from the creeping underground stem but also the runners, is interesting and suggestive as indicating the natural wild food-plant. Wheat and couch both belong to the same genus—viz., *Triticum*

(couch is also known as *Agropyrum*). No plant outside of the natural Order Gramineæ serves as a host plant—*i.e.*, all crucifers and legumes and potatoes and mangolds are immune.

Treatment.—As will have been gathered from the life-history of the Wheat Bulb Fly, there is no real vulnerable stage when insecticides could play their part. Keeping this in mind, admitting that apart from Wheat Bulb Fly the best place in the rotation for wheat is after potatoes, and postulating that wheat would only suffer from Wheat Bulb Fly when the wheat followed potatoes, two years ago I set the problem of a cultural method of fighting the Wheat Bulb Fly on a farm suffering repeated attacks to Mr J. W. M'Ilardy, B.Sc., the Vans Dunlop Scholar in Agriculture of his year, who was working in my laboratory. That Mr M'Ilardy dealt admirably with the problem will, I think, be admitted by our members who read his solution.

“ Control of Wheat Bulb Fly.

“ From the life-history of the fly, it is obviously useless to attempt to kill the larvæ and pupæ by spraying; and poison trapping of the adult being illegal, one must turn one's attention to cultural methods as the best available means of control.

“ The eggs are laid in July and August, preferably on bare soil, or on soil with a very light cover, and the pest is observed to be most destructive when bare land is exposed at the time. The method of control indicated is, therefore, to keep the land covered as far as possible in the summer before wheat is sown. For many considerations, including conservation of manures and economic manuring, wheat is the most suitable crop to follow potatoes on land where these two crops are grown. Wheat after maincrop potatoes is observed to be little affected by the Wheat Bulb Fly, as one would expect from the fact that the ground is well covered till after August. After Early maincrop and 2nd Early and Early varieties (especially the last), attack by the pest is more common and destructive. The control measures may thus take two directions: I. the growing of a catch crop between the potatoes and the wheat; and II. altering the rotation.

“ *I. Catch Crops.*—After Early and 2nd Early potatoes a catch crop should invariably be grown where possible, not only for the purpose of controlling the pest, but from other considerations altogether; the crop may either be eaten or ploughed in. The limits to this method of control, however, are greater than would appear, as, in the first place, most good Early potato land is not wheat land; and secondly, in wheat lands where Early potatoes are grown the question of conservation of moisture may often make a luxuriant leafy

catch crop such as follows potatoes out of count owing to its heavy transpiration.

"Suitable catch crops are, in the south, white turnips of the type of 'Early White Stone,' 'Garton's Six Weeks,' &c. Farther north rape is an excellent crop for the purpose, while ryegrass would also be a good crop for the purpose; a little vetch may be added. Vetches themselves are slower growing, and do not produce such a dense cover. Mustard is also a useful crop for the purpose, and can either be eaten by sheep or ploughed in. The crop employed will, of course, depend on local conditions, and whether the crop will be ploughed in or fed, and what type of forage is desirable. The important point is that the crop should be got in immediately after the potatoes are lifted, and that it should be broadcasted in sufficient quantity to produce as early a cover as possible. At best it must be remembered that the ground is left bare at a dangerous season for a short time. After potatoes have been lifted the ground is, of course, ready for the seed, as the labour required is little. After the late 2nd Early's and after Early maincrop a catch crop before winter wheat will often not be possible, especially in Scotland. These crops are more difficult to deal with in control measures. In the south there will usually be time for a catch crop, and if there is not, and if the summer be favourable for the fly, there are two possibilities: (1) grow a winter catch crop to conserve manure, and sow spring wheat in the area concerned; (2) sow winter oats instead of wheat in the Early maincrop break, provided the land is suitable and not too rich to allow of a standing crop's being obtained.

"*II. Alteration of the Rotation.*—(The spring wheat and winter oat suggestions above should really come also under this heading.) The suitability of wheat to follow potatoes is great, and considering the far-reaching effects an alteration of rotation may have, such should only be made if the pest be repeatedly destructive, and only after very careful consideration.

"(a) The first alteration that might be recommended is the reduction to a minimum or the elimination of Early maincrop or 2nd Early varieties, provided the pest is habitually bad and protecting the soil is not possible.

"(b) A six-course rotation might be modified as follows:—

1. Wheat.
2. Potatoes—Early and 2nd Early (Early maincrop).
3. Winter rape or vetches or ryegrass, followed by oats.
4. Roots.
5. Barley or oats.
6. Seeds.

“ The potatoes would not be over-highly manured, and the large part of the artificial manure would be applied to the hay crop (the wheat, of course, would secure its usual nitrogenous top-dressing, which, however, would not need to be so heavy as in the usual rotation). The great disadvantage of such an arrangement is that wheat is a very difficult and somewhat unsuitable crop after a sow-out. The ploughing would require to be done very early, almost as soon as the first hay was off, and would require to be deeper than usual. The soddy nature of the soil would not be any disadvantage during the winter; indeed, it would tend to prevent running together. The second disadvantage is that the oat crop would be very liable to lodging if the usual heavy manuring were given to the potato crop. The labour distribution would be rather bad owing to the time the wheat land would have to be ploughed to stand drilling of winter wheat later on. The conservation of manure requires a catch crop after the potatoes (which also would tend to cause lodging of the oats), while the gap between wheat and potatoes when the land is fairly rich would tend to cause loss.

“ The disadvantages of this arrangement are great, but it would only apply to 2nd Early or Early, and only where catch-cropping was not possible.¹

“ (c) Or the modification might be :—

1. Oats.
2. Roots.
3. Wheat.
4. 2nd Early potatoes.
5. Barley.
6. Seeds.

“ This might be tried on the break where 2nd Early's would be grown. The roots would be mangolds or turnips, and would require to be lifted rather early to get in the wheat (the turnips at any rate). The disadvantage is that the potatoes would have to be very lightly manured, so that the barley would not be too strong a crop, to allow the germination of the seeds. A poorer crop of potatoes would thus have to be accepted, an objection probably sufficient to make it in most cases come second to (b).

“ (d) A third alternative would be to dispense with wheat

¹ Here is an additional suggestion of a modification of rotation :—

- (1) Seeds.
- (2) Wheat.
- (3) Oats.
- (4) Potatoes—followed by Winter Catch Crop.
- (5) Roots.
- (6) Barley with Seeds.

In this case the Seeds could be ploughed early without so serious a sacrifice of autumn keep, as the Catch Crop could be allowed to stand late. It also obviates the difficulty from lodging of oats or barley after potatoes.

in the 2nd Early break altogether, to put in a winter catch crop, and follow by a crop of barley or oats, taking as great precautions as possible to prevent lodging. The rest of the rotation would not be altered.

“(e) The Forfar 7-Course rotation could be modified in a way similar to the 6-Course—viz., (1) wheat, (2) potatoes, (3) winter catch crop followed by oats, (4) roots, (5) barley, (6) seeds, (7) potatoes. The same considerations of the great disadvantages apply here as with the 6-Course.

“(f) The Mid-Lothian and West Lothian 4-Course could be run as an 8-Course thus: (1) wheat, (2) potatoes (Early and 2nd Early), (3) winter catch crop + oats, (4) hay, (5) oats, (6) roots, (7) barley or oats, (8) seeds. The bulk of the manure would be applied to (8), (1), and (2). The difficulty of wheat after seeds and also the danger of lodging of the oat crop (3) would again be present.

“(g) In Fenlands the rotation can be altered without the



Fig. 24.—*Female V. Crabro*.

Natural size. From nature.

same need to consider manurial conservation, and as the loss due to leaching is not of the same importance, oats could follow potatoes without a winter catch crop. The difficulty of the lodging of oats is a constant one in such districts, and the potato crop would require to be very sparingly treated.”

The farmer, especially if the season be a good growing one, should not be in a hurry to plough up his young wheat that may look very disheartening at the end of March in order to grow something else. Surprise yields have sometimes followed in fields that seemed in early spring to offer little hope of a crop.

IS THE HORNET (*Vespa crabro*) FOUND IN SCOTLAND?

There are seven British social wasps, six of which make nests; a seventh species lives as a “cuckoo” in the nest of

one of the others, and has no worker brood. The other six live in communities, where there are three castes—the males, the queen, the workers. I have been asked whether the hornet, the largest British wasp, is found in Scotland. My answer is

I do not think so, and this in spite of three records, which require verification. When a “hornet” has been brought to me, it has proved to be just a very large queen of one of the other wasps, and not the true hornet, *Vespa crabro*. Excluding the hornet, the other six British wasps are easy to confuse, their colours being so like; it is only when the wasp is closely examined that one can be certain of the species. The true hornet (Fig. 24), however, is very easy to tell: (1) by its much greater size; (2) by the brown colour which replaces the black of the other wasps; (3) by the orange which replaces the brighter yellow of the other wasps. In a word, the hornet is a large brown and orange-yellow wasp.

The nest of the hornet is like those of the other British wasps, made of wasp paper—*i.e.*, portions of bark and rotten wood are gnawed off by the jaws, and masticated and mixed with saliva to form the thick yellowish-grey paper. On the Continent the hornet is a source of trouble to the forester, from the habit it has of gnawing away the bark from the branches of birch, ash, oak, and other broad-leaved trees. This is done partly in their search for material for nest and cell building, and partly for the sap (Fig. 25). The hornet, like other wasps, is more or less omnivorous as adult, but the grubs—as in all wasp grubs—are carnivorous, being fed on insects and other flesh food. The nest of the hornet is found in hollow trees, under roofs hanging in a barn, and rarely in some bank.

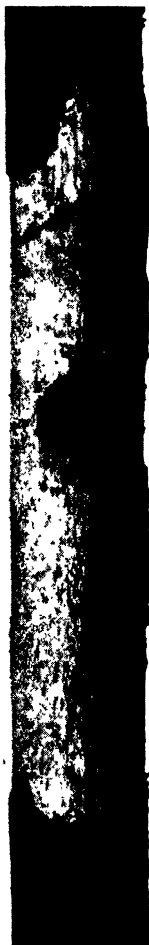


Fig. 25.—Branch gnawed by Hornets.

Natural size. From nature.

THE GIANT WOOD WASP (*Sirex gigas*).

Wood wasps belong to the same Order of insects as the ordinary wasps, but are quite different insects in structure.

(they have no waist) and in habit of life, as the grubs live inside stems and in the wood of trees, where they make galleries, and spoil the wood for technical purposes (Fig. 27). At least five species of the wood wasp family in Britain are enemies of trees, four of them attacking conifers, the other some broad-leaved trees. The largest of the species is the

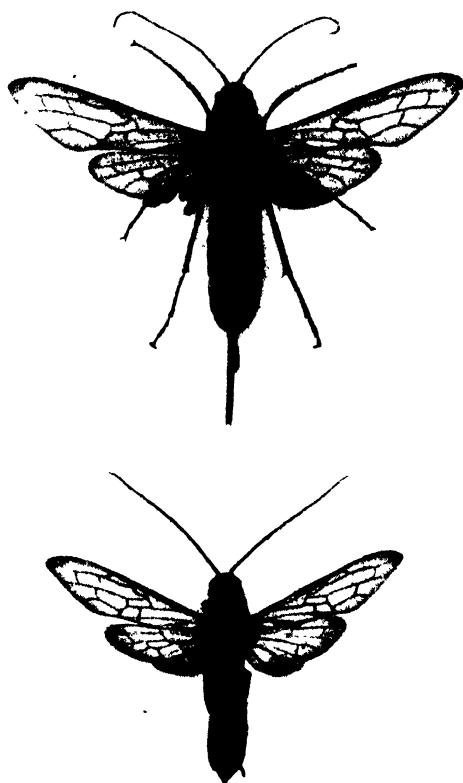


Fig. 26.—(a) *Giant Wood Wasp* (*female*).
(b) „ „ „ (*male*).

Natural size. From nature.

Giant Wood Wasp, and its striking female (Fig. 26, *a*) has been sent to me in the past year or two from Ayrshire, Kinross, Forfar, Peebles, Stirling, Mid-Lothian.

The male (Fig. 26, *b*) may measure $1\frac{1}{4}$ inch long, though specimens less than an inch long are met with; the abdomen is red or reddish-yellow, except the first and the last joints, which are black or dark brown. The female is larger—there

is here also considerable variation in size,—the head and body are black, save the first two and the last three joints of the abdomen, which are yellow. The abdomen ends in a spine, seen in Fig. 26, *a*; the other long projection is the ovipositor. This ovipositor or borer is longer than it looks in the figure, for it does not begin from the tip of the abdomen, but springs from the under side of the abdomen and a considerable distance forward. If the borer be examined, it is



Fig. 27.—Wood showing the borings filled with the sawdust and frass of the Steel-Blue Wood Wasp (*Sirex noctilio*).

Natural size. From nature.

found to be made up of five separate pieces; two elongated pieces that act as a sheath, each of them half a tube. Enclosed in the sheath are three closely applied instruments, an upper single piece forming a kind of roof in the middle line arching over the two halves of the real borer. The ripe female in moving over the bark seems to test for a suitable place, and when satisfied, she stands with the two pieces forming the sheath held parallel with the long axis of the abdomen, and bending the remaining parts at a right angle, she sends

the tip of the true borer into the bark. With a quickness surprising to the observer who sees it for the first time, the boring is then made, and an egg laid, one egg for each boring. The grub on hatching may gnaw in the same wood layer for a time, but later eats towards the centre, still later turning towards the periphery. This tunnelling outwards has the advantage of leaving the adult insect, after pupation is completed, with not too great a thickness of wood to eat through on its way to the open air. The grubs have rounded body, strong jaws, three pairs of very short legs, and a spine at the hind end; their colour is white. The Giant Wood Wasp lays her eggs on spruce, silver fir, pine, larch (including Japanese larch), Douglas fir. Sickly stems are formed, and



Fig. 28.—*Rhyssa persuasoria*, the *Pimplinid* parasite of the Wood Wasp grub.

Natural size. From nature.

eggs are laid willingly in broken, blown, and felled timber allowed to lie.

Even buried in solid wood the grubs are not safe from a natural enemy—a handsome Hymenopterous insect named *Rhyssa persuasoria*. The female *Rhyssa* by her ovipositor (Fig. 28) bores into a *Sirex* infested tree, and lays an egg in the *Sirex* burrow. The *Rhyssa* grub is carnivorous, and on hatching proceeds to live at the expense of the Wood Wasp grub, quite destroying it.

SOLITARY BEES (*Megachile*).

Besides social bees like the hive bee and the humble bees, which live in communities with three castes—males, queen, workers,—we have in Britain a large number of species of solitary bees, where there are only males and females. A male and female mate, the male dies, and the female under-

takes the whole responsibility of preparing a place for her eggs and supplying provisions—typically honey and pollen—for the grubs when these hatch; the grubs feed themselves on the store prepared for them at the time the eggs were laid. One of the most interesting of our solitary bees is *Megachile*. In 1922 I recorded the reception of cells and larvæ of *Megachile* from Dumfriesshire. The cells had been placed in the rotten wood of a greenhouse. One of our *Megachile* species makes a gallery in soft decayed wood, then makes



Fig. 29.—*Leaf of Hornbeam used by Megachile in her cell-making.*

Natural size. From nature.

a series of visits to some plant, from the leaves of which oval pieces are cut and carried, one at a time, to the prepared burrow, and there fitted together to form a cell; the cell is then provisioned with honey and pollen, and an egg laid. A new set of visits is paid to the plant, when circular pieces of leaf are cut and carried away to be used as lids for the cell. When one cell is made a second is started, and so on until the female has laid her complement of eggs, when she dies. It is not uncommon for rose leaves to show this cutting-out work of *Megachile*. Fig. 29 shows a leaf of hornbeam cut by

Megachile, and Fig. 30 a row of cells. When the grub enclosed in the cell has completed its growth it pupates in the cell, and the mature bee—a male or a female—leaves the cell and issues into the open.



Fig. 30.—Some of a row of cells made by *Megachile* in a tunnel in old wood. The surrounding wood has been cut away to expose the cells, each of which holds a grub and a provision of pollen and honey.

Natural size. From nature.

THE CURRANT CLEARWING MOTH (*Egeria tipuliformis* or *Trochilium tipuliforme*).

The Clearwings form a family of moths that differ much from the typical members of the Order. They are moths of

the sunshine (most moths are nocturnal), with clear glassy wings with dark veins (not covered with scales like ordinary moths), and with their bodies so banded and coloured as to resemble bees or wasps or certain flies. They are excellent fliers.

The Currant Clearwing Moth (Fig. 31) has a dark body; the thorax has on each side a yellow stripe, and the abdomen has three or four yellow rings; the hind end of the abdomen has the fan-like tuft characteristic of Clearwings; the wings are glassy with dark margins. The cater-



Fig. 31.—*The Currant Clearwing and Caterpillar.*

From a specimen in my museum. The moth natural size.
The caterpillar somewhat enlarged.

pillar is sixteen-legged; the colour is yellowish white, with the head brown or red brown and shiny; the body has raised warts, each carrying a short dark hair; the spiracles are black. The pupa is brown, and the segments have the hind edges spiny.

The moths are found in flight in June and July. The female lays her eggs on the currant shoot, and the caterpillar on hatching enters the branch and bores to the pith, which is tunnelled (Fig. 32). The caterpillar hibernates in the tunnelled stem, pupating in the succeeding April or May. When the adult is ready the pupa presses itself partly out of the

hole previously prepared, and the moth issues from the ruptured pupal skin.



Fig. 32.—*Branches of Currant from nature. The branch on the right shows the tunnel made by the caterpillar. The branch on the left shows, near the top, the flight hole of the moth.*

The spoiling of the shoots means loss of feeding area, and therefore loss in fruit. All three kinds of currant can be attacked, but the moth is chiefly a black currant enemy.

AGRICULTURAL RESEARCH IN SCOTLAND IN 1927.

BEING A BRIEF SUMMARY OF WORK AT THE
SCOTTISH AGRICULTURAL RESEARCH
STATIONS DURING THE YEAR.

*Readers desiring fuller information on any of the subjects mentioned
should write to the Director of the Station at which the investigation
is being carried out.*

ANIMAL BREEDING RESEARCH DEPARTMENT.

UNIVERSITY OF EDINBURGH, WEST MAINS ROAD,
EDINBURGH.

DURING the year under review the permanent staff of the Department consisted of the Director, Mr F. A. E. Crew, M.D., D.Sc., Ph.D., four research assistants, and two technical assistants. The Department is organised into three sections, which, however, work in close association. They are conveniently, if not accurately, labelled "Sheep," "Experimental Zoology," and "Animal Husbandry."

SHEEP.

A study has been made of kemp in the fleece of the Welsh Mountain sheep involving its naked-eye characteristics, its mode of growth, and possible origin. A method for its quantitative determination has been devised, and its economic importance and its association with other qualities of the sheep have been studied. A possible line of wool improvement in breeds such as the Welsh Mountain, where the elimination of kemp is the chief problem, has been examined.

A new method for the determination of the fineness of wool and of the fleece has been devised. The value to be determined is the mean diameter of a sample of wool. It is suggested that this can best be obtained by the calculation of a weight-length ratio, involving the estimation of the number of centimetres of fibre that weigh a milligram.

A study of colour inheritance was continued, and data relating to more colours and more patterns have been collected. The results of the preliminary investigation of the fleece of the Suffolk sheep suggested that an extension of the scheme for recording the colour changes of Suffolk lambs from birth to maturity should be made. Analysis of data shows that the total changes in head tuft colour in about 100 days is probably the most satisfactory indication of the subsequent freedom of the fleece from dark fibres. This can be supplemented by observation of the actual body colour at about 50 and 150 days. Microscopic examination of the pigmented fibres shows that the bulk of the pigment is deposited in the cortex of the fibres, and its distribution within the fibre is most frequently confined to the tip. Pigment production seems always to occur when the fibre is commencing growth, and the regional distribution of the different general fibre types seems to be a genetic character, dependent in turn on the differential action of genetic inhibiting factors for pigment formation.

Further data on fertility and fecundity were collected, and an analysis of separate flock records has been made to investigate the effects of age of parents and their breeding history on the fertility of particular matings. Ewes of five years yield the greatest fall of lambs, and the age of the ram has little effect on the fertility of his matings. It appears that the number of a ewe's offspring in her first season is not correlated with the number in the succeeding season, but her performance in her second season may be in some measure a guide to her future productivity.

In co-operation with Professor R. C. White of the Department of Agriculture, University of North Wales, a study has been made of the fertility and sex-ratio in Welsh Mountain sheep with special reference to environment. Records from a number of Welsh Mountain flocks were classified according to whether the sheep were kept under mountain, intermediate, or lowland conditions. The higher fertility of a lowland flock as compared with a mountain flock of the same breed depends on (a) more twinning, (b) lower percentage of barrenness, and (c) lower percentage of still-births. Factors (a) and (c) produce the greatest effect, and (c) is economically the most important. There is no reason to suppose that fluctuation in sex-ratio in different flocks is not the result of chance.

An investigation has been undertaken on the effects of environment on the distribution of pure-bred sheep in the British Isles. By mapping the distribution of all registered flocks it has been possible to secure definite indications of the association of certain specific types of sheep with certain environmental conditions, climatic, geological, and physical.

The effect of change of environment is being studied, the

material used being Corriedale sheep imported into Scotland from New Zealand. This investigation is being extended to an examination of the wool characters of the lambs, both pure and cross-bred.

The effects of meteorological factors on fertility are being examined. There is a suggestion that the mean temperature at tupping time has a greater influence on the total yield of lambs than the mean temperature at lambing time, and the latter has greater influence on Cheviots than on Blackfaces. The number of rainy days and the rainfall at lambing are associated inversely with yield.

ANIMAL HUSBANDRY.

Pigs.

Funds provided by the Board of Agriculture have enabled the Department to erect a suitable pig-house. The work on pigs is carried out along two main lines: (a) a study of the ideal types of bacon and pork pig, and (b) a study of inheritance of specific characteristics and blemishes. As regards the first, in co-operation with Mr H. R. Davidson of the School of Agriculture, Cambridge, a survey of the whole situation with reference to the type of breeding pig has been made. It is suggested that in the United Kingdom Pig Recording Societies should be established, analogous to Milk Recording Societies. Superimposed on these will be Type-Testing Stations, where results will be checked and further basic information obtained. It is intended to make accurate estimations as regards prolificacy and maternal ability of the sow, and economy, maturity, and quality of the progeny. For this the Department is working in co-operation with a bacon factory, and the final estimate of the value of a litter of a sow will only be made after the curing records are available. Part of the plant at present under construction at this Department will be devoted to this work. This Type-Testing Station is experimental, and upon its results will be drawn up the more detailed scheme. No one can deny the success that has attended the introduction of advanced registry among dairy cattle. There is every reason to hope that advanced registry in pigs will be in every way as beneficial.

With the co-operation of the Governor and the Prison Commissioners for Scotland, investigations relating to the inheritance of colour, prolificacy, mane, and hernia are being carried out at Barlinnie, and at the Department itself hermaproditism, "rose," comparative growth, and double matings are being studied.

Horses.

The investigation of the rôle of inbreeding in the formation of the Clydesdale breed was continued and extended to the prize-winning stallions of the past thirty years. The data show that, with the exception of the two five-year periods, 1885-1890 and 1900-1905, the prize-winning stallions have, on the average, been distinctly more inbred than the stallions of the breed as a whole. In an investigation of the sex-ratio of the Clydesdale, some 132,000 births have been classified. It would appear that the greater the number of services a stallion may make, the greater will be the proportion of filly foals; the percentage of still-births varies inversely with the sex-ratio. The greatest proportion of male still-births corresponds to the conception period which produced the greatest number of filly foals.

The inheritance of defects has also been studied from data supplied by the Board of Agriculture for Scotland. It would appear that some defects are inherited in a recessive manner, thus making it more difficult to eliminate them. Examples are stringhalt, roaring and shivering, sterility, and a predisposition to sidebone and ringbone.

Cattle.

The position of prize winners in the various Shorthorn classes at the Annual Show of the Highland and Agricultural Society was studied in relation to the ages of their parents. It was found that while there is nothing to indicate that there is either a decrease or an increase in the quality of the offspring according to the age of the parent, the greater number of the prize winners studied were sired by bulls four years of age or under, out of cows five years of age or under.

Prolificacy in cattle has also been studied, and the conclusion reached is that prolificacy can be increased by breeding for twinning, which is a heritable character. This must, however, be done very carefully, owing to the danger of one of the twins proving a freemartin. Among the smaller animals a study has been made of the inheritance of horns, colour, beard, and tassels in the goat.

EXPERIMENTAL ZOOLOGY.

Smaller Animals.

The work with fowls includes, among others, an investigation of the rôle of the thyroid gland in determining the structure and coloration of the plumage, a study of the minia-

ture egg, a study of fertility in the fowl, and a series of investigations on the relation of the reproductive glands to the type of plumage and of the head furnishings. In the rabbit investigations have been begun into moult, wooling powers, and growth. The genetics of the Caster Rex rabbit are being investigated. The genetics of silvering and the piebald pattern in mice are being studied, and also the effect of in-breeding. These investigations have not yet reached a stage when conclusions can reasonably be drawn.

ANIMAL DISEASES RESEARCH ASSOCIATION.

MOREDUN INSTITUTE, GILMERTON, EDINBURGH.

BRAXY.

The Braxy Preventive Vaccine which has been produced and issued to farmers and veterinary surgeons during the past few years was issued in greater quantity than ever before. Whereas in 1926 about 37,000 hoggs were inoculated, the vaccine issued in 1927 was sufficient for the inoculation of 48,000 hoggs, being an increase of 30 per cent. The returns received show the death-rate for hoggs inoculated in 1926 to be 1.35 per cent, as against a death-rate of 6.35 per cent in controls uninoculated. The returns for 1927 are not to hand at time of writing.

LAMB DYSENTERY.

1927 was the first year in which the Association was able to keep sheep in natural conditions at its own laboratory. A small flock of ewes and a tup were purchased from a part of the country in which the disease is unknown, and were kept at Moredun throughout the winter. Transmission experiments were carried out with these animals. In addition, ewes which had lost their lambs from dysentery the previous season were obtained, and an extensive search was made to ascertain if their genital organs harboured any germs capable of causing the disease. The examinations of these ewes and of their unborn lambs yielded negative results, and attempts to infect the healthy ewes with material from the genital organs of these infected ones gave similar results. Thus no evidence of ante-natal infection could be found.

The work was then concentrated on attempts to ascertain if lambs can be artificially infected with the disease after birth and the channel of infection by which this can occur.

It was found that new-born lambs can be infected by feeding them with relatively small amounts of the dung of affected lambs. Attempts to infect new-born lambs by all other methods gave negative results. Thus it has been proved that lambs become infected with dysentery after birth, and that the causal agent of the disease gains access through the mouth.

Bacteriological work carried out with a view to isolating the causal agent is still in progress.

Considerable success was achieved in immunising lambs by inoculation with a serum.

GRASS DISEASE.

The scope of the inquiry was very much widened. Investigators who specialise in many branches of science were approached, and they gave their help in the study of the subject. The work in progress is gradually eliminating various causes which might theoretically operate.

The lack of research work in the past on fundamental principles concerning the physiology of the larger farm animals is being severely felt in this investigation. Important questions are constantly arising upon which no work has been done, and progress is retarded by the inadequacy of present knowledge.

BOVINE CONTAGIOUS ABORTION.

The whole question of the need for further investigation into this disease was reviewed during the year. A comprehensive research programme involving five years' work by one investigator was drawn up. The inquiry will cost £7000 spread over the five years, but it is considered that the importance of the problem more than justifies this expenditure. It is to be hoped that the funds may be forthcoming at an early date.

SCRAPIE.

A beginning was made with transmission experiments; from the nature of these and of the disease, progress will be slow.

TUBERCULOSIS VACCINE.

The experiments with Calmette and Guérin's vaccine were continued. It will not be possible to estimate the value of the method for another two or three years.

Progress in all these important investigations is much hampered by lack of funds.

MOTOR FIELD LABORATORY.

The Motor Field Laboratory given by Mr Falconer L. Wallace of Candacraig and Balcairn was completed during the year. It is a perfectly complete unit for pathological research in any part of the country accessible by road. It carries a tent which serves as an extra room for use as a laboratory, and is equipped with every modern scientific device required for the purposes for which it is designed. It consists of a 34-H.P. Guy motor engine and 50 cwt. chassis, upon which is built a specially constructed body fitted up internally as a complete pathological laboratory. This motor laboratory facilitates the field work of the Association's staff, and enables elaborate methods to be carried out on the spot, the method of use being that it proceeds to a locality in which a disease under investigation is prevalent, remaining in that area as long as expedient.

LIBRARY.

The donation of £500 made by Mr Falconer L. Wallace and the grant of £250 made by the Carnegie United Kingdom Trust for the library were expended during the year. The Association now possesses the foundations of a really good library dealing with the questions relating to animal disease.

THE ROWETT RESEARCH INSTITUTE.

BUCKSBURN, ABERDEEN.

Before proceeding to give an account of the research work in animal nutrition which has been carried out at this Institute during 1927, it may be of interest to refer briefly to an important recent development in connection with the Institute—namely, the establishment of an Experimental Stock Farm for the purpose of testing out under practical conditions those results of fundamental research in animal nutrition which appear to be of economic importance. The need for such facilities is evident, and the establishment of the Experimental Farm has been made possible by the generosity of Mr J. Duthie Webster, who in 1925 gave a donation of £10,000, the income from which is directed to be used for the furtherance of the work of the Experimental Farm. Most of the land and stock required have been purchased, and most of the necessary buildings erected. The farm will be organised

in five departments—pigs, dairy cattle, beef cattle, sheep, and poultry. Of these, the pig and dairy departments are completed, and the other departments will be organised as soon as the necessary funds are available.

The particular aspect of animal nutrition on which attention has been concentrated during the past five years has been the question of the mineral requirements of farm animals. It is impossible, however, in this short report to refer to previous investigations. Several papers have already appeared in the 'Transactions' summarising the nature of the results obtained, and readers are referred to recent volumes for further information. Research during 1927 has been a continuation and amplification of previous work, and the further developments are indicated below.

MINERAL CONTENT OF PASTURES.

The result of this investigation, which has been carried out during the past three years, has shown that much of the hill pasture in this country grazed by sheep is markedly deficient as regards its mineral content compared with cultivated pasture, although there is apparently little difference in the energy-yielding value of the two types. In view of this result, therefore, an attempt has been made to feed to sheep grazing on poor hill pasture small amounts of a mixture rich in the mineral constituents which are deficient in the pasture. Tests have been carried out at ten different hill farms in Scotland on the effect of such supplementary feeding on the health of ewes, the mortality of both ewes and lambs, weight of lambs at birth, and the weight of fleeces. The mineral matter along with a small quantity of cod-liver oil was incorporated in a cake, which was cut into small cubes. Initial difficulties were experienced in enticing the sheep to eat the cake, but when these had been overcome the sheep ate the cubes readily. The tests, so far as they have gone, seem to indicate that the feeding of the cubes had a beneficial effect on the health of the ewes, and that at lambing time they were in better condition than control groups. The average weight of the lambs at birth was also greater. Further, there was a definite increase in the weight of the fleeces in the mineral-fed groups over the control groups. This beneficial effect of feeding extra mineral matter was more marked in the spring following the winter period, when the mineral content of the pasture is lowest.

This work on the mineral content of pastures is being developed, as it is a subject of enormous economic importance, in view of the large grazing areas in Scotland where it is known that the pastures are deficient. Investigations on such

lines are also being carried out in different parts of the Empire. In Kenya Colony, for example, analyses of the pasture have revealed definite mineral deficiencies in certain areas. Feeding experiments are being carried out, and the results obtained are comparable with the results in Scotland.

IODINE.

The requirements of animals for iodine, now considered one of the essential mineral elements necessary for normal growth and health, have been under consideration for some time. Previous investigations have shown that there are differences in the iodine content of vegetable and animal products, and also in the water supply in different parts of the country. In most districts there appears to be sufficient iodine in the foodstuffs to meet the requirements of animals. In certain districts, however, especially in districts where goitre is prevalent in human beings, it is doubtful whether the amount of iodine present in the food is sufficient. A systematic investigation of the iodine content of the pastures and of animal products, such as milk and eggs, in goitre and non-goitre areas is at present being carried out.

SCHOOL CHILDREN INVESTIGATION.

Under the auspices of the Scottish Milk and Health Association, an investigation has been carried out to test the effect on health and growth of feeding extra milk to school children. Experiments were carried out at seven different centres in Scotland. It was found that the giving of from one-half to one pint of milk per day during school days was followed by a definite increased rate of growth, and in most cases there was a distinct improvement in the condition of the children. This beneficial result was obtained with either whole or separated milk, but the feeding of biscuits of equal caloric value to the amount of separated milk had no beneficial effect. These results are of importance both from the point of view of the health of the children and of the milk industry of this country. These tests are being repeated, and it is intended that the information gathered will be used in propaganda to increase the consumption of milk in this country.

POULTRY INVESTIGATIONS.

Joint experimental work with the Scottish Colleges of Agriculture and with the Ministry of Agriculture for Northern

Ireland has demonstrated the value of milk for growing chickens. It has been found that the addition of milk to a cereal ration is accompanied by a marked increase in the rate of growth. In addition, the experiments have demonstrated that separated milk is as valuable for promoting growth as whole milk. Tests have also been carried out to discover, if possible, a cheaper substitute for fish meal for egg production, and for this purpose a protein of vegetable origin is being used, supplemented by a mineral mixture.

OTHER WORK.

In addition to the above work, which is of immediate practical importance, progress continues to be made with research in fundamental problems in nutrition. The effects of different dietary constituents on the movements of the intestine are being investigated. It has been found that diets with deficiency or excess of certain constituents lead to abnormal intestinal movements, and it seems probable that this derangement of the function of the intestine may be an important predisposing cause to disease. Work on the influence of minerals, vitamins, and ultra-violet rays on the composition of the circulating fluids of the body is yielding information of interest in connection with certain diseases originating in faulty diet. The question whether the abnormal composition of the blood due to defective diet is a predisposing factor in certain infectious diseases, rendering the animal more susceptible, is being studied. Samples of foodstuffs, both home-grown and purchased, are being analysed for their mineral content, and it is hoped to publish soon, for the guidance of the stock farmer, tables showing the composition of most of the foodstuffs in common use on the farm.

THE SCOTTISH PLANT-BREEDING STATION.

CRAIGS HOUSE, CORSTORPHINE, MIDLOTHIAN.

In this, the first, summary of work done at the Scottish Plant-Breeding Station, prepared for the 'Transactions' of the Highland and Agricultural Society of Scotland, an introductory note concerning the origin and the location of the Station may be of interest.

The provision of over £50,000 in 1920, composed of £25,000 received from Government Funds and the remainder raised by voluntary subscription, had made possible in that year the

establishment of a Plant-Breeding Station in Scotland. In 1921 the Scottish Society for Research in Plant-Breeding was formed for the purpose of undertaking research for the improvement of plants and crops in Scotland, and about 30 acres of land were purchased as a site for the Station. Mr Montagu Drummond, B.A., F.L.S., now Regius Professor of Botany in the University of Glasgow, was appointed Director of Research. A programme of research was drawn up and work was started immediately, certain parts of Craigs House being reserved for office and laboratory work. In this programme the main crops chosen for experimentation were: cereals, potatoes, herbage plants (pasture strains), and root crops. In the case of cereals and root crops it has been possible to concentrate attention only on oats and swedes respectively.

In anticipation of the annual inclusion in the 'Transactions' of a brief account of the work at the Station, it is proposed to confine attention on this occasion to the work that is being pursued in connection with oats. The work on other plants will be dealt with on future occasions. In this way it is hoped that a certain amount of repetition will be avoided, and that it will be possible to give a more comprehensive and interesting account of the several schemes of work than if all the experiments, many of which extend over a series of years before reaching a conclusion, were described every year.

In Scottish farming oats occupy an important place; they have a wide range of cultivation, as they are grown on all classes of soil. Within comparatively recent years many new varieties of oats have been introduced to growers by private breeders and by foreign Plant-Breeding Institutes. That many of these new varieties are better than those they have displaced cannot be denied, but it is probable that it is on the more fertile soils that the new varieties have the greatest vogue.

On examining the position of oat varieties grown on the more fertile soils, it is found that while many of those now commonly grown reach a high standard of excellence both in yield and quality of grain, there has arisen a pressing demand for oat varieties with stiffer straw and, if possible, a higher grain-yield than have most of the widely-grown varieties of the present day.

On many of the less fertile soils the Potato oat and the Sandy oat still maintain their hold, the newer varieties not being able to surpass them there. But the need for improving these old and well-established varieties by hastening the ripening period and by increasing the yield of grain is often emphasised.

Research at Corstorphine is being vigorously pursued by crossing various varieties of oats possessing different desirable

characteristics in the hope of combining these in one variety, and by selecting different types of plants from each hybrid progeny in order to obtain strains of plants adapted to particular conditions of soil and climate. Certain plants are being selected mainly on account of their strength of straw, others on account of their early-ripening quality, others again on account of their apparently high grain-yielding capacity, and some on account of their leafy habit of growth. While two or more of these characteristics may be combined in one variety to a certain degree, it is also desired to have varieties in each of which one or other of these characteristics will be developed to the highest degree.

In the case of oats it may in general be reckoned that at least five generations of plants require to be grown before strains breeding true to type are obtained. Until pure-breeding strains are isolated from the hybrid progenies, multiplication is not proceeded with.

From the research work that has been done on oats at the Station several promising selections have now been obtained, and they have reached the stage for multiplication and comparative trials. The results of small plot-trials at Corstorphine have indicated that several of the Potato hybrids and Sandy hybrids possess considerable merit. Some of these were selected on account of their stiff straw, which showed no signs of lodging during either of the seasons 1926 or 1927. The yield of grain in most of these selections has been, so far, satisfactory, but further trials will be necessary. The Sandy hybrids were selected mainly on account of their early-ripening quality and resemblance in certain characteristics to the Sandy oat. The straw of the Sandy hybrids is also fairly stiff. One of these hybrids was tried on various high-lying soils in Aberdeenshire and Kincardineshire in 1927, and favourable reports of its performance have been received.

A new oat, Glebe, raised by the late Dr J. H. Wilson, St Andrews, has been multiplied at the Station, and has been tried for several years in different localities in Scotland, ranging from Caithness to Dumfries. Glebe is akin to the Potato type of oat, and is excellent for milling purposes. On soils where the Potato oat is commonly grown, the results of the trials of the Glebe oat generally showed that it compared favourably with Potato, although it might be slightly later in ripening in some areas: the yield of grain was higher and the straw stiffer.

About 300 selections of unfixed hybrid oats from several different crosses, and in various generations ranging from the first to the sixth, were grown at the Station in 1927 for comparison and selection. The hybrid progenies obtained from several crosses with foreign varieties of oats have been critically studied, and some very early-ripening and apparently

good grain-yielding plants have been marked for further breeding and selection.

Sufficient time has not yet elapsed to allow any of the new varieties raised at the Station to be properly tested on a wide scale prior to their being put on the market. But good progress towards the marketing stage has been made, and it is confidently hoped that at least one variety of oats (and possibly more) will be on the market in the near future.

Advantage might be taken of this opportunity to add a note on the facilities afforded for parties visiting the Plant-Breeding Station. The tram-car terminus at Corstorphine is about one mile distant from the Station, and buses from Edinburgh (Waverley Bridge) to Uphall or to Linlithgow pass the south end of Maybury Road, which is less than one mile from the Station. Visitors will be welcomed at the Station during the growing season, but it is desired that, as far as possible, arrangements for visiting the Station should be made beforehand with the Director of Research, Craigs House, Corstorphine. The Seed Testing Station of the Board of Agriculture for Scotland is adjacent to the Plant-Breeding Station, and, it is understood, may also be visited by arrangement with the Director there.

WEST OF SCOTLAND AGRICULTURAL COLLEGE.

(a) MILK PRODUCTION DEPARTMENT.

The research work of the Milk Production Department of the West of Scotland Agricultural College is concerned solely with problems connected with the feeding and management of dairy cattle. A considerable number of trials have been undertaken. Some of these must go on for several years before definite conclusions can be drawn from them, but others have been completed or have reached a stage where the results are of interest.

Bean Meal.—It was found that the meals from home-grown, China, Sicilian, and white Rangoon beans are very similar in composition and of about the same value for milk-producing purposes. Under the new Fertilisers and Feeding Stuffs Act the importation of white Rangoon beans for feeding purpose will be prohibited, owing to the danger of poisoning.

Roots or no Roots?—A ration containing 40 lb. swedes and 12 lb. hay per cow daily has been compared with one containing no succulent feed and 20 lb. hay. A uniform grain mixture was fed throughout, and the cows consumed 6 per cent more grain when getting no roots than when roots were fed.

On the average the cows produced 4 per cent more milk and butter-fat on the roots than on the no-roots ration, while the feed cost of production was $\frac{1}{2}$ d. per gallon down when roots were fed. This meant that if the cows were calved four months before going to grass, the use of roots gave an addition of £1 per cow to the returns obtained above those necessary to meet the cost of feed.

Storage of Swedes.—In a series of trials in Wigtownshire it was found that the largest yields were obtained where the swedes were ploughed in or earthed up, and the smallest where they were pitted, while those growing unprotected were in an intermediate position. The relative values per ton for milk-producing purposes of the roots stored by the various methods were determined. It was found that the pitted roots were about 10 per cent less valuable than those grown unprotected, earthed up, or ploughed in. This shows that, in Wigtownshire at least, some of the roots intended for spring use should be earthed up or ploughed in if the maximum returns per acre are desired.

Silage.—It has been found that a silage composed of oats, peas, beans, and vetches can give quite good results for milk production, and that 24 lb. of silage makes a satisfactory substitute for 40 lb. of swedes. To get the same returns as from 1 ton of swedes, $11\frac{1}{2}$ cwt. of silage must be fed; but if we allow for a 10 per cent loss in the silo, then $12\frac{3}{4}$ cwt. must be put into the silo to give the desired feeding returns.

Dried Beet Pulp.—A year or two ago it was frequently stated that dried beet pulp had an injurious effect on the composition of milk, and that it tended to reduce the percentage of fat and other solids present. Work conducted at Holmes Farm shows this to be incorrect. Dried beet pulp has no harmful effect on the composition of milk. In feeding trials it has been found that $7\frac{1}{2}$ lb. of dried beet pulp is equal to 40 lb. of swedes, or $3\frac{3}{4}$ cwt. of the pulp is equivalent to 1 ton of swedes.

Minerals for Milk Production.—Experiments on salt consumption have been conducted on several farms, and it has been found that where salt bricks are provided the individual requirements of the cows vary greatly. On some farms the majority of the cows use salt bricks fairly regularly, while at other places many cows take no salt whatever. In summer cows seldom touch salt in the south-west, as they seem to get all they require in the pasture.

In the years 1924 to 1927 a trial was conducted with a herd of cows in Wigtownshire on the value of steamed bone flour as a mineral supplement for dairy cows. In 1924 the herd was not being fed a mineral supplement regularly. After this the herd was divided into two lots, and Lot 1 was fed steamed bone flour in 1925 and 1927, while Lot 2 received

the supplement in 1926. The supplement was fed with the grain mixture from shortly after the cows calved until they went to pasture. If the records for 1924 to 1927 be considered, it is found that in each year the change from the mineral supplement to no supplement was more advantageous, so far as milk production was concerned, than the change from no mineral supplement to supplement.

The Water Supply.—The provision of abundance of drinking water is essential to copious milk production. At Holmes Farm the individual water bowls for several cows have been furnished with meters, and it has been found that on the average the cows consumed $5\frac{1}{2}$ gallons of water for each gallon of milk produced. This was in addition to the water in the feed, and shows the importance of a good water supply.

Grains for Calves.—In our experimental work with the self-feeder for young calves, it has been found that the calves prefer whole oats and maize to the ground grains. In addition, the calves make larger and more economical live-weight gains on the whole than on the ground grains, so there is no object in grinding grains for calves.

Age.—In a study of milk records it was found that milk and butter-fat production increased up to the time the cows were seven years of age, remained fairly constant for a year or two, and then decreased with advancing age. It was found that the three-year-olds gave milk of a higher butter-fat percentage than the older cows. From four years of age onwards there is little change in butter-fat percentage with age until advanced ages are reached, when there may be a fall of importance. These records also show that in selection for production more attention has been paid to quantity than to quality.

Age at First Calving.—From the records just mentioned it has been found that as the age at first calving advances from twenty-seven to thirty months the average production of the animals increases, and from this to a first calving age of thirty-six months it slowly decreases. This means that for best ultimate results the heifers should be bred at around twenty-one months of age.

(b) MILK UTILISATION DEPARTMENT.

The investigations carried out by the Research Advisory Officer in Milk Utilisation at the West of Scotland Agricultural College have reference to milk and its products, and to specific raw materials used in dairy manufactures such as rennet, annatto, and salt. The whole aim of these investigations is to endeavour to improve the quality of milk and its manufactures by the hygienic control of the production of milk, and by the

elimination of those defects of manufactured dairy products which depreciate their commercial value.

Milk.—In relation to milk, a detailed investigation of well-recognised faults like oiliness, bitterness, metallic taste, and other disagreeable flavours are in progress, and the factors which cause their incidence and influence their action have been studied for the past two years. It appears that the development of an oily taste in milk may be accelerated by a catalyst, and that to some extent it is influenced by the predominating bacterial flora. It has also been found that an oily flavour may develop in milk taken aseptically from certain cows. The feeding of beet pulp, which according to popular belief is productive of oiliness, was shown by experiment to have no definite relationship to the fault. Further, it was ascertained that in certain forms of udder trouble the milk had an abnormal flavour which was suggestive of oiliness.

The relationship of certain bovine infections, such as garget, contagious mammitis, "staw," and contagious abortion to the odour and flavour of the resultant milk, is under investigation. "Staw" causes a peculiar disagreeable odour, which is observable even in the new milk. It occurs most frequently in the milk of recently calved cows, and is associated with the presence of a specific organism in the milk.

The origin of "pin points," which cause high bacterial counts in market milk, is being traced. The organisms which cause "pin point" colonies on bacteriological media are thermoduric, and occur often in large numbers in pasteurised milk. They are thought by many investigators to be derived from the utensils, but it has not yet been shown by them from what source the utensils in turn have become contaminated. Our investigations have shown that pin points are associated with the milk of certain cows, and more particularly with the foremilk of such cows.

The microscopic examination of milk for *B. tuberculosis* has been made the subject of considerable investigation, and from the results already obtained it appears possible to modify the present technique so as to get a much larger number of positive results than by the method in common use. Dilution of the milk (before centrifuging) with sterile water, to which has been added 0.01 alcohol, has given good results.

Cheese.—The cause of a fault called "Black Spot" in commercial cheese has been satisfactorily determined. Black spot could not be traced to bacterial or enzymic origin, nor to the presence of salts of zinc, copper, or iron. It was found to be due entirely to minute traces of lead. Red lead, white lead, lead acetate, lead solder, and encrustations in the interior of lead water piping all produced black spot when added to cheese in minute traces. The principal source of lead contamination in cheese-making is probably the cheese vat

itself, the lead being derived from the lead paint used to protect the walls of the steam jacket, and from solder used in jointing the seams of the vat. By the use of a special technique the presence of lead in blackened portions of commercial cheeses was established. The introduction of elemental sulphur into the raw curd during the process of manufacture did not induce black spot, but imparted a very undesirable odour and taste into the ripe cheese.

Bleaching or Discoloration of Coloured Cheddar Cheese, which was made the subject of a communication to the 'Transactions' thirty years ago, has been intensively studied for the past two seasons, and considerable progress has been made towards a solution of this long-standing problem. Discoloration causes a heavy financial loss to the home cheese trade every year, and occurs in some of the best cheese dairies in the country. Investigation has so far shown that the discoloration factor is highly infectious, that it is commonly associated with the primary milk, and that certain forms of it can be held in abeyance by pasteurisation of the cheese milk. Its elimination calls for special care in the production of the primary milk, and for the effective sterilisation of all cheese-making utensils and appliances. Once established in the dairy, the discoloration factor is difficult to control unless special hygienic measures are adopted. During the past season 220 experimental cheeses were made, and discoloration in all degrees of intensity was developed experimentally. These experiments have clearly demonstrated that discoloration is frequently of late development, and that cheeses which maintain a perfect colour up to nine months may subsequently become discoloured.

NORTH OF SCOTLAND COLLEGE OF AGRICULTURE AND UNIVERSITY OF ABERDEEN.

SOILS AND DRAINAGE RESEARCH DEPARTMENT.

On the Experimental Farm of the North of Scotland College of Agriculture at Craibstone many investigations and field experiments were carried out on the use of fertilisers and into questions of crop growth, but in addition to these a Research Department was carried on in conjunction with the University of Aberdeen, and with the aid of grants from the Development Commission, which deals especially with (1) the composition and constitution of Scottish soils, and (2) the composition of soil drainage and the losses which the soil suffers through drainage.

In practically all civilised countries except Britain soil surveys have been made on a more or less complete and intensive scale, and soil maps have been published embodying the results of the surveys. In this country a little preliminary work only has been done by different institutions which are interested in soil research. In this preliminary work the Soils and Drainage Research Department at Aberdeen takes a part, and a certain amount of survey work has been done in the counties of the north of Scotland. In order that a soil survey may be efficiently and adequately carried out, a special staff devoted to this work is required, and no serious progress can be expected until such a staff is appointed. It is absurd to expect that a real soil survey of the country can be carried out in spare intervals of time by persons the main part of whose time and attention is otherwise occupied. Much more rapid and efficient work would be done, and more economically done, by a small staff of surveyors located at one centre who would carry out a uniform survey of the whole of Scotland.

The British soils which have been investigated most are those of the south-east of England, and in British agricultural science these were regarded till recently as typical soils, and it was assumed that what was true of these soils could be applied with little or no modification to all British soils. The soil research work at Craibstone has shown the necessity for very considerable modifications of this easy view, and has emphasised the fact that Scottish soils generally exhibit certain wide differences from those of the south-east of England, which have hitherto been our text-book soils. Scottish soils are not to be regarded as singular in this respect: they are examples of a widely distributed type which is also found in Wales and in the north and west of England, as well as in Scandinavia and elsewhere. We have to recognise that, based on origin and climate, there are a number of broad and widely distributed types of soil, of which the soil of Rothamsted and its surroundings represents only one small part.

The Aberdeen Station has investigated the mineral constitution of Scottish soils, and has shown that most of them differ greatly from the soils of south-east England, which are the residuals of age-long processes of weathering, since they contain considerable amounts of unweathered or partially weathered minerals, and therefore have large reserves of bases, such as potash, soda, and lime, contained in these minerals in the form of silicates. In this respect Craibstone soil, which is typical of much of the soil of the north of Scotland, is in sharp contrast with the soil of Rothamsted. The soils of Great Britain are mainly derived from glacial materials left as a covering when the ice of the great ice age disappeared from the country. In the north of Scotland such glacial detritus is derived from crystalline granitic and metamorphic rocks,

while in the south-east of England it is derived mainly from sedimentary rocks. This results in a profound difference in the mineral composition of the resulting soils, and at Aberdeen this mineral composition has been a main subject of study. There is an immense amount of work to be done along these lines, but at present the work is greatly hampered by the smallness of the staff and resources which are available.

The other main line of work followed in the Aberdeen department was research into soil drainage. This was carried out mainly by the use of lysimeters or drain gauges. Three large lysimeters have been constructed at Craibstone, each 1/1000th of an acre in area and 40 inches deep, enclosing the soil in its natural condition. These are cropped in the ordinary rotation of the surrounding field, and each receives a different manurial treatment, with the object of throwing light upon what is removed from the soil in our climate by drainage under ordinary conditions of agriculture. Such investigations have a very important bearing on the subject of the rate of exhaustion of lime and manures from the soil, and therefore on the question of the unexhausted value of manures. Records of the rainfall and temperature are kept alongside the lysimeters, and the amount of each of the important constituents—potash, soda, lime, magnesia, sulphate, chloride, phosphate, silicate, and nitrogen—removed from the soil in solution in the drainage water each month is determined. An account of these experiments has already been given in the 'Transactions,' 1921, Vol. xxxiii., pp. 56-79. In addition to the investigations made with these large lysimeters, numerous experiments have been carried out by the use of small drainage tanks 10 inches in diameter and 20 inches deep, artificially filled with Craibstone soil and subsoil.

MILK RECORDS.

TWENTY-FIFTH YEAR—RECORDS OF 29,459 COWS.

By **WILLIAM STEVENSON, B.Sc., N.D.A., N.D.D.**, Superintendent,
The Scottish Milk Records Association.

SYSTEMATIC milk recording in Scotland was continued in 1927 under the direction of the Scottish Milk Records Association on the same lines as in 1926 and previous years. The new scheme of private or unofficial milk records for unregistered herds inaugurated in 1924 was also continued during this year.

The Association in 1927 consisted of the following members :

Name and Address.	Body Represented.
Mr John Robson, Jun., Lynegar, Watten .	Caithness Milk Recording Society.
Mr Thos. Barr, Hobsland, Monkton . . .	} Central and South Ayrshire Milk Recording Society (4 Circuits).
Mr William D. M'Cubbin, Lochlands, Maybole	
Mr William D. Wardrop, Rigg, Auchinleck .	
Mr Andrew Wilson, Finlayston, Ochiltree .	
Mr George Templeton, Carnell Farm, Hurlford	
Mr Alex. Y. Allan, Aitkenbar, Dumbarton .	Central Ayrshire No. 2 Milk Recording Society. Dumbartonshire Milk Recording Society.
Mr James Armstrong, Castlehill, Lockerbie	} Dumfriesshire Milk Recording Society (4 Circuits).
Mr Alex. Kirkpatrick, Barr, Sanquhar . .	
Mr Robt. Millar, Shawsholm, Closeburn .	
Mr Mungo Sloan, Douglasshall, Ecclefechan .	
Mr John Speir, Newton Farm, Hallside	
Mr Robert M. Broadfoot, Whitekirk Mains, Prestonkirk	East Kilbride and District Milk Recording Society (2 Circuits).
Mr Robt. M. Reid, The Glen Farm, Falkirk	East Lothian Milk Recording Society.
Hon. G. Corbett, Rowallan, Kilmarnock	East Stirlingshire Milk Recording Society.
Mr William M'Adam, Athronhall, Milnathort	Fenwick (High) Milk Recording Society.
Mr James W. Miller, Lochhead, East Wemyss	} Fife Milk Recording Society (2 Circuits).
Mr D. F. Mackenzie, Parks of Inches, Inverness	
Mr D. M'Millan, Eorrabus, Bridgend .	Highland Milk Recording Society. Islay Milk Recording Society.

Name and Address.	Body Represented.
Mr Andrew Craig, Ryesholm, Dalry . .	"John Speir" Milk Recording Society.
Mr Robert Young, Drum, Kilkenzie . .	Kintyre Milk Recording Society.
Mr John T. Kirkwood, B.Sc., N.D.A., Scorrieholm, Lesmahagow	Lesmahagow Milk Recording Society.
Mr Andrew C. M'Candlish, Ph.D., B.Sc., Claunch, Sorbie	{ Lower Wigtownshire Milk Recording Society (2 Circuits).
Mr Alexander M. Owen, Culnoag, Sorbie .	Montgomerie Milk Recording Society.
Mr Jas. J. Howie, Eglinton Mains, Irvine	{ North of Scotland Milk Recording Society (2 Circuits).
Mr John A. Carlyle, B.Sc., Prudential Build- ings, Arbroath	Renfrew and Bute Milk Recording Society (2 Circuits).
Mr George Buchanan, Hunterhill, Paisley .	Renfrewshire (Upper Ward) Milk Recording Society.
Mr Robert M'Alister, Mid Ascog, Rothesay .	
Mr William Howie, Carnwadric, Thornlie- bank	
Mr Andrew Cochran, High Ardwell, Kirkcolm	Rhins of Galloway Milk Recording Society (4 Circuits).
Mr T. R. Evans, Alton, Drummore	
Mr John Forster, Mains of Larg, New Luce	
Mr James Wither, Awhirk, Stoneykirk .	
Mr John Sanderson, Linthill, Lilliesleaf .	
Brig.-Gen. J. A. Houison-Craufurd, Dunlop House, Dunlop	Roxburgh and District Milk Recording Society. Stewarton and Dun- lop Milk Recording So- ciety.
Mr H. G. Baird, Kirkchrist, Kirkcud- bright	
Mr H. W. B. Crawford, Forneth, Castle- Douglas	
Major C. R. Dudgeon, Cargen Holm, Dum- fries	
Mr William P. Gilmour, Balmangan, Borgue	
Mr J. B. Douglas, Barstibly, Castle-Douglas	
Mr Eben More, Dalmacoulter, Airdrie . .	
Mrs Houison-Craufurd, Dunlop House, Dun- lop	
Mr James Howie, Hillhouse, Kilmarnock .	
Mr Thomas C. Lindsay, Aitkenbrae, Monk- ton	
Mr A. W. Montgomerie, Lessnessock, Ochil- tree	
Mr Matthew Bowie, Balmuldy, Maryhill, Glasgow	
Mr Alexander Munro, Leanach, Culloden Moor	
Mr T. J. Anderson, Cairnfield, Lerwick .	
Mr Matthew White, M.R.C.V.S., Sandayre Villa, Lerwick	

Name and Address.	Body Represented.
Mr Alex. Murdoch, East Hallside, Hallside . Mr W. P. Gilmour, Balmangan, Kickeudbright Sir Hugh Shaw Stewart, Bart., C.B., of Ardgowan, Inverkip	The Highland and Agricultural Society of Scotland.
Mr T. C. Lindsay, Aitkenbrae, Monkton . Mr J. F. M'Gill, of M'Gill & Smith, Ltd., Ayr Principal W. G. R. Paterson, 6 Blythwood Square, Glasgow	
Mr Harry Armour, 16 Murrayfield Road, Edinburgh	The West of Scotland Agricultural College.
Mr Alexander Lauder, D.Sc., 13 George Square, Edinburgh	
Principal E. Shearer, 13 George Square, Edinburgh	The Edinburgh and East of Scotland College of Agriculture.
Mr G. G. Esslemont, M.B.E., B.Sc., 41½ Union Street, Aberdeen	
Professor J. Hendrick, Marischal College, Aberdeen	The North of Scotland College of Agriculture.
Mr J. F. Tocher, D.Sc., 41½ Union Street, Aberdeen	
Mr Robert Dickie, Knockenjig, Sanguhar . Col. W. T. R. Houldsworth, of Kirk- bride, Maybole	Co-opted Members.
Mr James Dunlop, Board of Agriculture for Scotland, Edinburgh	
Mr George Hobson, 4 Southampton Row, London, W.C.1	
Mr Robert Laird, Lawthorn, Irvine . .	

Chairman—Mr Alex. Y. Allan.

The following were the principal members of the staff :—

Secretary and Treasurer—Mr John Howie.

Superintendent—Mr William Stevenson, B.Sc., N.D.A., N.D.D.

Assistant Superintendent—Mr Percy H. Hart.

SCHEME OF OFFICIAL MILK RECORDS.

ADMINISTRATION.

In 1927, as in previous years, the scheme of official milk records was administered by the Association through local Milk Recording Societies. The grant from the Development Fund, obtained through the Board of Agriculture for Scotland, was continued in 1927 on the same conditions as in the previous year. The grant authorised for 1927 amounted to approximately £3350.

The Ayrshire Cattle Herd-Book Society continued their grant of £50 to the Association.

Grants were allocated to local societies on the following scale :—

1. Societies testing at intervals of not more than twenty-one days :—

- (a) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.
- (b) An annual grant of 50s. to each new member in his first or second year, and of 15s. to each member in his third or fourth year.
- (c) An annual grant of 14s. per member towards the cost of surprise check tests.

2. Societies testing at intervals of from twenty-two to twenty-eight days :—

- (a) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.
- (b) An annual grant of 30s. to each new member in his first or second year, and of 15s. to each member in his third or fourth year.
- (c) An annual grant of 12s. 6d. per member towards the cost of surprise check tests.

During the latter part of 1926 every effort was made to obtain additional applications for membership of local societies in 1927 throughout the various dairying districts of Scotland, and 69 definite applications were received. But for various reasons, such as the continued acute depression in the industry, and members disposing of their dairy herds, or changing their farms, abortion in herds, &c., there were more than the usual number of resignations. Also, a few of the new applicants could not be accommodated in existing or new local societies, owing to full membership or to their isolated position.

All the local societies or circuits which operated in 1926 continued in 1927, with the exception of the Orkney Society, one of the two outlying single-member societies. This herd was removed during 1926 to Aberdeenshire and included in one of the circuits of the North of Scotland Society. A new circuit was formed by the East Kilbride and District Society in the Hamilton area. The number of recorders' circuits in 1927 was 43 ; the number of herds officially tested, 732 ; and the total number of cows officially tested, 29,459, compared with 29,236 in the previous year, an increase of 223 cows, and the largest number in the history of the Association. The progress made in 1927, though small, was considered satisfactory under the conditions prevailing in the industry, when the majority of agricultural societies or associations were experiencing the greatest difficulty in maintaining their membership.

The following is a list of the Milk Recording Societies which operated in 1927, with the name and address of the Secretary of each Society :—

Name of the Society.	Secretary.
Caithness	Mr John Robson, Jun., Lynegar, Watten.
Central and South Ayrshire (4 Circuits)	Mr E. A. Bell, M.A., B.Sc., 239 High Street, Ayr.
Central Ayrshire No. 2 .	Mr James Cochrane, N.D.A., Holmes Farm, Kilmarnock.
Dumbartonshire	Mr John Bilsland, Quay Place, Dumbarton.
Dumfriesshire (4 Circuits)	Mr Thomas Henderson, Solicitor, Lockerbie.
East Kilbride and District (2 Circuits)	Mr Arthur Gilmour, C.A., 23 Silvergrove Street, Glasgow.
East Lothian	Mr James L. Nisbet, Easter Newton, Kirknewton.
East Stirlingshire . . .	Mr Robert M. Reid, The Glen Farm, Falkirk.
Fenwick (High). . . .	Mr Thomas Murdoch, West Tannacrieff, Kilmarnock.
Fife (2 Circuits) . . .	Mr William Macniven, Royal Bank, Kirkcaldy.
Highland	Mr J. M. Hunter, Queensgate, Inverness.
Islay	Mr D. M'Millan, Eorrabus, Bridgend.
"John Speir"	Mr William Longwill, Hawhill, Dalry.
Kintyre	Mr Robert Young, Drum, Kilkenzie.
Lesmahagow	Mr Gavin Hamilton, British Linen Bank, Lesmahagow.
Lower Wigtownshire (2 Circuits)	Mr David Breckenridge, Solicitor, Newton-Stewart.
Montgomery	Mr Robert Laird, Lawthorn, Irvine.
North of Scotland (2 Circuits)	Mr John A. Carlyle, B.Sc., Prudential Buildings, Arbroath.
Renfrew and Bute (2 Circuits)	Mr Thomas Hunter, Solicitor, 24 High Street, Paisley.
Renfrewshire (Upper Ward)	Mr William Henderson, Old Crookston, Nitshill.
Rhins of Galloway (4 Circuits)	Mr John Gibson, Solicitor, Stranraer.
Roxburgh and District .	Colonel A. Haddon, Solicitor, Hawick.
Stewarton and Dunlop .	Mr John Craig, Cauldhame, Dunlop.
Stewartry of Kirkcudbright (5 Circuits)	Mr Patrick Gifford, Solicitor, Castle-Douglas.
West Lothian	Mr John Crooks, Little Ochiltree, Uphall.

SEASON 1927.

The table on the following page shows for each society the number of herds, the number of cows tested, the average interval between the tests, and the duration of the recording season :—

Name of the Society or Circuit.	No. of Herds.	No. of Cows Tested.	Average interval between Tests, in Days.	Duration of Re-cording Season, in weeks.
1. Caithness	1	12	21	52
Central and South Ayrshire—				
2. Cumnock and Auchinleck	18	563	21	52
3. Girvan and Maybole	17	870	21	52
4. Kilmarnock, Galston, & Newmilns	19	732	21	52
5. Ochiltree and District	18	543	21	52
6. Central Ayrshire No. 2	18	687	21	52
7. Dumbartonshire	20	623	28	52
Dumfriesshire—				
8. Lower Annandale	15	670	21	52
9. Upper Annandale	18	739	21	52
10. Lower Nithsdale	17	679	21	52
11. Upper Nithsdale	17	734	21	52
East Kilbride and District—				
12. East Kilbride and District	20	674	28	52
13. Hamilton and District	19	563	28	52
14. East Lothian	13	363	21	52
15. East Stirlingshire	21	656	24	52
16. Fenwick (High)	17	578	21	52
Fife—				
17. Dunfermline and Kirkcaldy	20	625	27	52
18. Cupar-Fife and Perth	18	372	25	52
19. Highland	20	651	28	52
20. Islay	6	133	21	41
21. "John Speir"	19	550	24	52
22. Kintyre	21	921	28	52
23. Lesmahagow	19	562	28	52
Lower Wigtownshire—				
24. Whithorn and Port William	15	815	21	52
25. Newton-Stewart and Wigtown . . .	15	865	21	52
26. Montgomerie	16	525	28	52
North of Scotland—				
27. Forfarshire and Kincardineshire	19	473	28	52
28. Aberdeen and District	16	433	28	52
Renfrew and Bute—				
29. Bute and Inverkip	19	550	27	52
30. Paisley and Kilmacolm	19	597	26	52
31. Renfrewshire (Upper Ward)	14	565	21	52
Rhins of Galloway—				
32. Kirkcolum and District	17	1260	26	52
33. Kirkmaiden and District	13	1123	26	52
34. Luce Valley	17	1057	26	52
35. Stranraer and District	16	1186	25	52
36. Roxburgh and District	16	545	21	52
37. Stewarton and Dunlop	19	617	27	52
Stewartry of Kirkcudbright—				
38. Dalbeattie and New Abbey	18	822	25	52
39. Castle-Douglas & New Galloway	18	944	25	52
40. Castle-Douglas and District	18	923	26	52
41. Kirkcudbright and District	18	1109	25	52
42. Borgue, Twynholm, & Gatehouse	18	920	26	52
43. West Lothian	20	630	28	52
Total No.	732	29,459	...	...

DEFINITIONS.

The milk records compiled by the Association are records of the estimated quantity of milk produced by each cow in a separate lactation, and of the estimated percentage of milk fat contained in the milk. For convenience a gallon of milk was reckoned as 10 lb. A gallon of milk of average quality weighs almost exactly $10\frac{1}{2}$ lb. The following further particulars concerning each record were also given wherever possible :—

Name of cow, byre number, and herd-book number.

Sire of cow, and herd-book number of sire.

Dam of cow, and herd-book number of dam.

Date of birth.

Date of calving preceding opening of record.

Number of weeks in milk.

Date of next calving after record closed.

The following particulars of the preceding record were appended to each record, where available :—

Date of calving preceding opening of record.

Quantity of milk in gallons.

Percentage of fat in milk.

Number of weeks in milk.

The milk yields were estimated in respect of quantity and milk-fat percentage from the results of systematic periodic tests by trained recorders approved by the Association. The recorders visited the farms for this purpose at intervals varying from twenty-one to twenty-eight days, and each day of visit was regarded as the middle day of the period covered by the visit. Milk records estimated in this way approximate closely to the actual milk yields.

METHOD OF RECORDING ADOPTED—OFFICIAL RECORDS.

A distinctive feature of milk recording in Scotland in 1927, as in former years, was that the official records were entirely the work of trained official recorders. Recorders had previously to undergo a special course of training in milk recording at the Dairy School for Scotland, at Kilmarnock, or other approved College of Agriculture. Only candidates of good character and good general education were selected to attend these courses; and all recorders, before appointment, were approved by the Executive Committee of the Association.

Fuller details of the method of recording adopted will be found in the Association's annual report. The byre sheets were written out in duplicate. The principal copies were posted at regular intervals to the office of the Association, and the carbon copies left with the respective members. The

recorder transferred the results from the extended byre sheet to the milk record book for the herd indelibly in ink, each cow being assigned a separate page, at the top of which full particulars of the cow were entered, including the indelible tattoo marks on the animal.

The byre sheets were carefully revised and corrected in the Association's office during the season, and a list of the necessary corrections sent to each recorder periodically to be entered in the record books.

Visits of inspection were made to each recorder and to the members of local societies at the different farms periodically throughout the year by members of the Association's staff, and reports thereon submitted to the Executive Committee. The Executive Committee reserved the right to withdraw approval of any recorder at any time or to limit the period of service of any recorder with any particular society. Members of local societies refusing to observe any of the rules of the Association, or deemed to be guilty of conduct injurious to the true interests of milk recording, were liable to be temporarily or permanently suspended.

Another distinctive feature was the surprise check tests, the records of each herd being checked in this way about two or three times throughout the year. The recorder was instructed, by a letter from the superintendent on a date unknown to recorder and owner of herd, to remain at the same farm another day and make another complete twenty-four hours' test. The surprise test results were entered on special buff-coloured byre sheets, and in the record books in red ink immediately below the results of the regular test of the previous day. The buff byre sheets were posted to the Association's office with the other sheets, and any abnormal differences were immediately noted and reported to the Executive Committee.

As a result of this system of surprise check tests, each page of the 1927 milk record books contains two or three lines of entries in red, comparison of which with the immediately preceding entries provides valuable evidence as to the genuineness of the milk records.

In addition to the surprise check tests made by the recorder, a number of independent surprise tests were made by the Association's staff, in order to check the recorders' work.

All records were closed at the end of December, the current lactations being carried forward to the new books of the following year. Finally, summary sheets were written out in duplicate showing the total milk yields for each cow for the lactation or part lactation, with full particulars of the cow, dates of calving, &c. The principal copy of the summary sheet was posted to the Association's office with the record book, and the second copy left with the owner of the herd.

All record books and summary sheets were carefully revised,

corrected in detail, and initialled in the Association's office during the next few months, the record books being returned later to the respective members, and the summary sheets retained and bound for future reference.

The milk records were next classified into three groups, for cows and heifers respectively, on the following basis. Experience has confirmed the view that a very useful comparison is obtained by reckoning the yields at their estimated equivalent of milk of 1 per cent fat. Such a comparison takes into consideration both the quantity and the quality of the milk.

Cows with a milk record equivalent to not less than 2500 gallons at 1 per cent fat, and heifers with a milk record equivalent to not less than 2000 gallons at 1 per cent fat, were grouped into Class I. Cows and heifers with milk records of less than two-thirds of these amounts—viz., 1660 and 1330 gallons respectively—were grouped into Class III.

The following short table shows the corresponding values of these yields in fairly good milk of 3·5 per cent milk fat :—

Class.	Yield in Milk of 1 per cent Fat. (Gallons.)	Corresponding Yield in Milk of 3·5 per cent Fat. (Gallons.)
Cows in Class I . .	Not less than 2500 . .	714
Heifers in Class I. .	Not less than 2000 . .	571
Cows in Class III. .	Less than 1660 . .	474
Heifers in Class III. .	Less than 1330 . .	380

All cows and heifers falling between these limits would come into Class II. Such animals naturally claim less attention than the good milkers or the obviously unprofitable animals. It should be noted, however, that Class II. would include a certain number of unclassified yields, as there were a number of instances where, from various causes, the results of a whole normal lactation could not be obtained.

The Association will shortly publish an Annual Report giving all details of the work of the Association, and of each local Milk Recording Society during 1927. This report will include tables showing for each farm the number of cows and heifers tested and the number and percentage included in Classes I. and III. respectively. Each herd is included under the respective local society, but is represented only by an alphabetical letter, the owner being advised privately of the identity in the report of his own herd or herds. From these tables any member may see at a glance how his herd compares with other herds in the same or any other district, and the improvement in his own herd compared with previous years. The report will also show in tabular form the percentage of Class I. and Class III. animals of all animals tested under the Association's scheme during the year, and will thus

afford a valuable indication of the progress in milk production generally.

An important feature of the Association's annual reports, from 1917 inclusive, is the register of good milking cows with the names and addresses of owners and full particulars of the milk records. This register includes only the records of animals with a milk yield equivalent to not less than 2800 gallons containing 1 per cent of milk fat in the case of a cow, and 2240 gallons containing 1 per cent of milk fat in the case of a heifer, and is further restricted to animals which completed their lactation before the end of the year and gave birth to another calf before 1st May of the year following. The fullest available particulars of each record are given, and all lists of records are submitted to the owners of the respective animals for revision before publication. The register is of great value to all interested in increased milk production and in the breeding and rearing of animals of the best milking strains, and is invaluable for reference.

It should always be kept in mind when making a comparison of cows in different herds or in different districts, that the different methods of dairying practised have a considerable influence on the milk yields, and that therefore milk yields alone do not necessarily indicate the true relative inherent or hereditary milking qualities of the animal. But the authenticated milk records compiled by the Association are of inestimable value to breeders and owners of dairy cows if properly interpreted.

REVIEW OF 1927—OFFICIAL RECORDS.

Recording was carried on in 1927 by 43 local societies or circuits, comprising 732 members, compared with 730 members in the previous year, a net increase of 2 members. The number of cows tested in 1927 was 29,459, compared with 29,236 in 1926, an increase of 223 cows, and the largest number officially tested in the history of the Association.

During the year 10 recorders, for various reasons, terminated their engagements. The Executive Committee, however, in the same period approved of 15 applicants for the position of milk recorder, and were able to recommend a sufficient number of qualified recorders. Fourteen women recorders were employed in 1926, and 35 men recorders.

In this connection the Committee, as formerly, were indebted to the West of Scotland Agricultural College for giving special courses of instruction for milk recorders to meet the Association's requirements. Only one special course was required in 1927—namely, in December. Sixteen selected candidates attended the course, and 12 obtained the certificate.

The Executive Committee purchased the supplies of milk-testing apparatus, sulphuric acid, and amyl alcohol for local societies, as in previous years.

The system of surprise check tests, introduced in 1920, was continued in 1927. The total number of check tests made by recorders during the season was 1428, or an average of approximately two check tests per herd tested throughout the whole season. In no instance in 1927 was the average milk yield for the herd more than 3 lb. milk daily less on the occasion of a check test, as compared with the previous day. Only one herd showed an average of over 2½ lb. less, and only eight herds an average of over 2 lb. less, including the herd already referred to. In addition to the surprise tests arranged for and carried out by the recorders, the Assistant Superintendent made 45 special check tests of different herds. The results in most instances agreed very closely in regard both to average milk yields and fat percentages with those of the recorders' previous tests. Only three herds showed an average daily yield of over 2 lb. less on the occasion of a special check test, and only two herds had an average of over 2 lb. more. With regard to average fat percentages, only one herd showed an average fat percentage of over .3 per cent lower, and one herd an average of over .2 per cent higher. With the exception of two herds, the average fat percentages were all within .2 per cent of those obtained by the recorders at the previous tests.

With regard to the general conditions for milk production in 1927, the weather during the year was to a great extent unfavourable for all farming operations. At the beginning of the grazing season the weather was exceptionally cold and dull, and pastures remained unusually bare for the time of the year. Throughout most of Scotland the temperature was moderate during July and the first three weeks of August, but the weather was abnormally wet and unsettled. A short fine spell intervened at the end of August and the beginning of September, but for the greater part of September and October the weather was very wet and stormy. The yield per acre of root crops was below the average, but hay bulked better than was at one time expected, and the acreage under pasture was estimated to yield above the average of the previous ten years, although considerably less than in 1926. Though pasture was fairly abundant during the summer and autumn months, the grass was soft and of inferior feeding value.

Prices generally for dairy products remained low relatively to purchased foods and other costs of production; and from the financial point of view the year was probably no better than those immediately preceding it, and was not a satisfactory one for dairy farmers. There was the same difficulty

in disposing of all milk produced even at the low contract rates arranged, and herd owners were not inclined to stimulate production to the full extent by liberal feeding; in consequence cows in milk did not give the yields that might otherwise have been expected.

In the case of recorded herds, other conditions militated against a higher average yield. As in recent years, a very considerable proportion of herds which had been recorded for a period of years were entirely dispersed, or for other reasons already referred to did not continue to be recorded, while a proportionately large number of "new herds," or herds tested for not more than three years, were included. The proportion of regular "milk record herds" was thereby correspondingly reduced.

The following table shows for each society or circuit the number and percentage of cows and heifers of each class in 1927, with a comparison of the average results from 1914 to 1927 inclusive :—

Society or Circuit.	Cows and Heifers.				
	Number.			Per Cent.	
	Total.	Class I.	Class III.	Class I.	Class III.
1. Caithness	12	6	2	50	17
Central and South Ayrshire—					
2. Cumnock and Auchinleck .	563	421	4	75	1
3. Girvan and Maybole . . .	870	563	24	65	3
4. Kilmarnock, Galston, and Newmilns	732	502	35	69	5*
5. Ochiltree and District . .	543	458	5	84	1
6. Central Ayrshire No. 2 . .	687	552	3	80	...
7. Dumbartonshire	623	469	10	75	2
Dumfriesshire—					
8. Lower Annandale	670	469	22	70	3
9. Upper Annandale	739	459	17	65	2*
10. Lower Nithsdale	679	415	13	69	2*
11. Upper Nithsdale	734	441	16	64	2*
East Kilbride and District—					
12. East Kilbride and District	674	403	25	60	4*
13. Hamilton and District . .	563	261	9	46	2
14. East Lothian	363	296	5	82	1
15. East Stirlingshire	656	338	15	64	3*
16. Fenwick (High)	578	419	3	81	1*
Fife—					
17. Dunfermline and Kirkcaldy	625	449	5	74	1*
18. Cupar-Fife and Perth . . .	372	243	7	68	2*
19. Highland	651	391	7	70	1*
20. Islay	133	59	1	44	1

Society or Circuit.	Cows and Heifers.				
	Number.			Per Cent.	
	Total.	Class I.	Class III.	Class I.	Class III.
21. "John Speir"	550	372	7	68	1
22. Kintyre	921	530	24	59	3*
23. Lesmahagow	562	468	2	83	...
Lower Wigtownshire—					
24. Whithorn and Port William	815	348	56	46	7*
25. Newton-Stewart and Wigtown	865	456	48	53	6
26. Montgomerie	525	380	13	72	2
North of Scotland—					
27. Forfarshire and Kincardineshire	473	395	3	84	1
28. Aberdeen and District	433	290	19	67	4*
Renfrew and Bute—					
29. Bute and Inverkip	550	337	9	61	2
30. Paisley and Kilmacolm	597	390	13	68	2*
31. Renfrewshire (Upper Ward) Rhins of Galloway—	565	305	19	56	4*
32. Kirkcolum and District	1260	837	33	66	3
33. Kirkmaiden and District	1123	721	25	64	2
34. Luce Valley	1057	611	37	58	4
35. Stranraer and District	1186	834	21	70	2
36. Roxburgh and District	545	318	12	65	2*
37. Stewarton and Dunlop	617	439	17	71	3
Stewartry of Kirkcudbright—					
38. Dalbeattie and New Abbey	822	493	35	61	4*
39. Castle-Douglas and New Galloway	944	648	23	69	2
40. Castle-Douglas and District	923	478	45	54	5*
41. Kirkcudbright and District	1109	671	40	61	4
42. Borgue, Twynholm, and Gatehouse	920	556	26	60	3
43. West Lothian	630	409	10	65	2
Of all the cows and heifers tested in 1927	29,459	18,930	765	65½	2½
Comparison with 1926	29,236			65½	2½
Comparison with 1925	28,410			60	5
Comparison with 1924	27,957			65	3
Comparison with 1923	26,952			65	2
Comparison with 1922	27,275			63	2
Comparison with 1921	26,752			58½	4
Comparison with 1920	24,191			55½	3½
Comparison with 1919	20,786			49½	4½
Comparison with 1918	17,827			49	5½
Comparison with 1917	19,564			50	4½
Comparison with 1916	22,702			53½	4½
Comparison with 1915	26,572			46	6
Comparison with 1914	26,424			39½	9

* Excluding herds tested during only a part of the recording season—647 cows in all.

Reviewing the results of the 43 circuits as a whole, we find that of the total of 29,459 cows and heifers tested in 1927, excluding 647 animals in herds tested during only a part of the season, and therefore not classified, 18,930 were included in Class I., and only 765 in Class III. This is equivalent to 65 $\frac{3}{4}$ per cent in Class I. and 2 $\frac{1}{4}$ per cent in Class III. Thus, 65 $\frac{3}{4}$ per cent of all the cows and heifers tested gave a milk yield equivalent to not less than 714 gallons containing 3.5 per cent milk fat in the case of a cow, and 571 gallons in the case of a heifer; while only 2 $\frac{1}{4}$ per cent gave a milk yield equivalent to less than 474 gallons containing 3.5 per cent milk fat in the case of a cow, and 380 gallons in the case of a heifer. In 1925, 60 per cent were eligible for Class I., and 5 per cent were included in Class III.

The average standard attained in 1927 was undoubtedly lowered by the inclusion of the large proportion of "new" herds, and by the adverse trading conditions already referred to, yet it will be observed from the preceding table that the proportion of animals qualifying for inclusion in Class I. in 1927 is the highest reached since the commencement of official milk recording twenty-five years ago.

It will be observed also that the proportion of good milking or Class I. cows and heifers to the total animals tested has increased from 39 $\frac{1}{2}$ per cent in 1914 (when the present basis of classification was adopted) to 65 $\frac{3}{4}$ per cent in 1927, while the proportion of Class III., or obviously unprofitable, animals has been reduced in the same period from 9 per cent to 2 $\frac{1}{4}$ per cent. These figures indicate a large increase in the volume of milk produced during the last thirteen years, and represent probably only about half of the progress made in tested herds since the introduction of milk recording in 1903. It is estimated that milk record herds generally are at the present time giving higher average yields than unrecorded herds to the extent of at least 200 gallons per cow per annum.

But improvement from milk recording is not confined wholly to herds officially recorded in 1927. A very much larger number, about twice as many herds, have been tested and recorded for longer or shorter periods since the Association's scheme of milk recording was introduced. Also, stock bulls of heavy milking strains, and milk record cows, have been widely disseminated among untested herds, and a large number have been exported. Such bulls and such cows have undoubtedly a great improving influence on the dairy herds of a country generally.

Unfortunately, the milk producing industry still remains in a depressed condition. A point has been reached at which it is evident that even good milking cows are yielding only a small profit; and the advantages of milk recording are to a great extent being absorbed in balancing the adverse conditions

existing in the industry. This position is clearly reflected in the abnormally large number of dispersal sales of dairy herds in recent years. Probably never was there greater need of every possible assistance, in the form of public grants for milk recording purposes and otherwise, for the dairy farmer in his efforts to maintain the milk producing industry on an economic basis. But no matter what the other conditions may be, it is quite evident that the dairy herd with the higher inherent capacity for production will always give the better return; and in this respect milk record herds have a considerable advantage over the ordinary herds of the country.

NEW SCHEME OF PRIVATE OR UNOFFICIAL MILK RECORDS.

The Association's new scheme of private or unofficial milk records, inaugurated in 1924, was continued in 1927 on the same lines as in the three previous years. The chief objects are to establish milk recording on a wider and more popular basis, and to induce a greater number ultimately to adopt the system of official authenticated milk records.

Milk recording under this scheme was administered directly by the Association. The following inducements were offered to members :—

- (a) The hire of a set of appliances for testing purposes, free of annual charge, the member to upkeep the apparatus in good condition.
- (b) Byre sheets and record books free of charge, with stamped addressed envelopes for return of byre sheets.
- (c) All calculations in byre sheets and record books to be made in the Superintendent's office, and the sheets and record books to be returned to the herd owners duly extended and completed.
- (d) The total charge on members to be limited to an annual subscription to the Association at the rate of 1s. 6d. per cow tested.

The total number of herds included in 1924 was 76, and the total number of cows 1636. The corresponding figures for 1925 were 155 herds and 3283 cows, and for 1926, 193 herds and 4087 cows.

One hundred and sixty-two of the 193 members of 1926 continued in 1927, and 37 new members were enrolled. Twelve of the members were transferred to the scheme of official recording for season 1927. The total membership for 1927 was 187, and the total number of cows included 3813. This shows a decrease of 6 members for unofficial records. But, on the other hand, this new scheme of recording inaugurated in 1924 had in 1927 already been the means of obtaining for

official recording 18 new members of a very desirable type, which is one of the objects for which it was promoted.

There are several reasons why the membership under this scheme for any given year cannot be expected under present conditions to show any great increase. The better milking herds are being transferred to official records. Further transfers have been arranged for season 1928. At the other extremity there are a considerable number of very poor herds, the owners of which are evidently unduly discouraged by the very low yields recorded, and apparently have not the mentality to appreciate the possibilities of effecting the much-needed improvement. In addition, the charge for recording, at the rate of 1s. 6d. per cow tested, which the Association have been compelled to make, is considered by the general body of members and prospective members to be excessive, and, as was anticipated, is proving a severe handicap in all efforts to make the scheme popular among the rank and file of dairy farmers. It is the reason given by a considerable number of members for severing their connection with the Association, as they find after about two years' experience they can carry on recording on similar lines independently at smaller cost.

But this new scheme of unofficial recording is undoubtedly serving a most useful purpose. For reasons already given, its effect must not be measured merely by the number of herds included in any particular year. And a considerable proportion of the members who have resigned and meantime severed their connection with the Association have formed the milk recording habit, and ought ultimately to be found among members of milk recording societies. But if only the charge could be reduced to that originally recommended by the Association—namely, 6d. per cow—an extension of the movement might confidently be expected.

The following is a brief outline of the method of recording adopted:—

All cows in the herd yielding milk must be included in the record. Each cow must be clearly distinguished in the byre by a stall number on the wall. On the occasion of a test the cows must be milked in the same rotation evening and morning, and care must be taken that the milk of each cow for twenty-four hours, and for twenty-four hours only, is included in the test. The owner, or his agent, is required to weigh the milk of each cow evening and next morning, by means of the spring balance and pail provided, once every twenty-one to twenty-eight days, and to enter the results and other necessary particulars in the byre sheet provided by the Association; and each byre sheet must be signed by the owner, or on his behalf, as correct in respect of all entries made. The byre sheet is sent by first post to the Superintendent, and calculated and extended by the Association's staff, and re-

turned to the owner as soon as completed. A milk record book for each herd is written out in the Association's office. The record books are closed at the end of the recording season as at 30th November, and the results summarised and entered in special summary sheets. The record books and copies of the summary sheets, when completed and checked, are sent to the respective owners of the herds.

It must, of course, be clearly understood that the milk records compiled under this scheme are purely unofficial, unauthenticated records, and have no connection with the official authenticated milk records of the Association.

On the whole, members under this scheme have carried out their obligations satisfactorily. The milk has been weighed and the byre sheets posted to the Association's office with regularity, and a number of letters have been received from, and opinions expressed by, members indicating that they are obtaining very useful guidance from the records. Several members have recommended the scheme to other farmers, or forwarded the names and addresses of likely new members.

The total number of herds recorded, officially or unofficially, in 1927 was 919, and the total number of cows recorded 33,272. Assuming the number of milking cows of the recognised dairy breeds in Scotland to be approximately 200,000, the proportion recorded in 1927 was about 17 per cent.

PROSPECTS FOR 1928.

Propaganda on an extensive scale is carried through each year. Applications for membership, or for further particulars, are invited through press advertisements, articles, &c. All members of the Association, members of local milk recording societies, members under the scheme of unofficial records, and milk recorders are requested individually to assist in obtaining new members for either scheme in their respective districts, and to send to the Superintendent the names and addresses of all local dairy farmers likely to be interested. In this way a comprehensive propaganda list of possible new members is compiled. To each address on this list are sent circular letters and propaganda literature giving particulars of both systems of recording and enumerating the advantages to be obtained, and a form of application. Following on the distribution of literature, personal visits are made to most of the farms by the Association's staff, and the herd owners are classified into groups according to the degree of probability of their becoming new members. Wherever any particular interest is shown the visit is repeated until a definite decision is reached. By this method, continued over a number of years,

dairy farmers who were formerly quite indifferent have been enrolled as new members.

Similar efforts were made to obtain additional applications for membership of local societies in 1928. With the scheme of private or unofficial milk records in operation, it was possible to carry out propaganda work for both schemes simultaneously, and over 2000 circular and other letters, with propaganda literature, were distributed to over 1500 dairy herd owners throughout Scotland. In addition, over 800 personal visits were made. But the severe depression in dairy farming which has existed for several years is evidently having a cumulative effect on herd owners, who are seeking to cut down expenditure in every possible direction; and there is the greatest difficulty in persuading them to adopt any new scheme entailing the least additional expenditure. The number of definite new applications for official records for season 1928 obtained to date is 71, and a considerable number of prospective new members for 1929 have also been obtained.

All the local societies of 1927 have continued in 1928. Two societies, owing to increased membership, have found it necessary to form an additional circuit—namely, the Central and South Ayrshire Society, and the Rhins of Galloway Society. On the other hand, with a view to reducing expenditure, the Dumfriesshire Society have reduced the number of circuits for 1928 from 4 to 3, by extending the interval between tests to 28 days. The number of recorders' circuits in 1928 is 44, one more than in the previous year, though the number of herds and cows officially tested may be approximately the same as in 1927.

The Committee are in a position to recommend a sufficient number of qualified recorders. All vacancies at the beginning of the year have been filled, and there remain a number of approved recorders on the waiting list. In this connection the Committee, as formerly, are indebted to the West of Scotland Agricultural College for giving special courses of instruction for milk recorders to meet the Association's requirements.

The Committee have arranged for supplies of sulphuric acid, amyl alcohol, and milk-testing apparatus for local societies in 1928.

With regard to unofficial records, 142 of the 187 members of 1927 have continued in 1928, and 19 new members have been enrolled. Six of the members have been transferred to the scheme of official recording for season 1928, making a total of 24 transferred. The total membership for unofficial recording at present is 155, with approximately 3255 cows, or an average of 21 cows per herd.

GENERAL REVIEW.

Systematic or official milk recording has now been in operation in Scotland for twenty-five years, though only during the last fifteen years on any considerable scale. The Association have no reason to be disappointed with the results achieved in the herds in which it has been adopted and continued. It is hardly necessary to reiterate here the beneficial results of milk recording in what may be termed the regular milk record herds of Scotland. These have been set forth repeatedly in previous reviews, and are well-known to all who have any intimate acquaintance with milk production. Average annual milk yields have been increased to a remarkable degree, a number of herds of considerable size having reached the phenomenally high average standard of one thousand gallons per cow per year. The confidence of outside buyers has been obtained in a measure most gratifying to all concerned, and the capital or selling value of good milk record stock, young or old, male or female, has been enhanced out of proportion even to the improved milk yields. In these respects good progress has been made throughout the last fifteen years. Scotland has been the pioneer in milk recording for all English-speaking countries, and has easily maintained her lead up to the present time in regard both to quality of herds and proportion of herds tested. In the breeding of milk record pedigreed stock for the improvement of herds at home or abroad her reputation to-day is probably the highest in the world.

From one important point of view the results, after so many years of pioneer and propaganda work, may at first sight appear disappointing. The proportion of recorded cows to the total dairy cows in Scotland is only about 17 per cent, or taking only those counties where dairying is extensively practised, about 20 per cent. And for reasons dealt with fairly exhaustively in previous reviews, the total membership of local milk recording societies, though still actually increasing, seems to have reached a point where further progress is slow and difficult.

But a very little further investigation shows that a purely voluntary movement of this kind in a community noted for its intense conservatism in all matters of custom and practice need not have been expected to be rapidly and widely adopted, even though the advantages to be obtained therefrom were apparent from the first to the original promoters. In this connection attention may be drawn to an official publication of the International Institute of Agriculture, Rome, issued in 1925, entitled "Dairy Cow Testing in Different Countries," which contains official reports on milk recording in twenty-

two different countries. The following table is compiled from the official publication referred to :—

PERCENTAGE OF DAIRY COWS TESTED IN
DIFFERENT COUNTRIES.

Country.	Percentage.
Denmark	23
Scotland	17
Netherlands	14
Sweden	10
England and Wales	8½
Finland	7
New Zealand	6
Germany	5
Norway	5
Ireland	4½
Canada	1½
Australia	1½
United States	1
Latvia, Austria, France, Belgium, Czechoslovakia, } Switzerland, Japan, Italy, Union of South } Africa }	all below 1

It will be observed that the percentage of dairy cows regularly recorded in Scotland compares very favourably with that of other countries. With the exception of Denmark, where milk recording was introduced earlier than in Scotland, and where conditions prevail more favourable to movements organised on a co-operative basis, Scotland contains a higher proportion of recorded cows than any other country in the world. Countries newer in this respect may show a more rapid rate of progress for recent years, but only up to a point considerably below that already reached in this country.

And when we consider the spread or diffusion of the benefits arising directly or indirectly from milk recording, we find that these penetrate widely in various directions other than that of individual members of milk recording societies. For example, there is the effect on the remaining four-fifths of the dairy herds of the country. The wide dissemination annually of milk record stock bulls, and milk record cows, for breeding purposes among untested herds alone must exercise an incalculable improving influence on a very large number of these herds. And such influence is increasing with the rapid extension of the practice of using only milk record bulls in dairy herds.

Also, there is the powerful educational influence and force of example permeating and leavening the whole mass of dairy farmers, and gradually creating a new habit of thought in the realm of milk production. If a census could be taken in this connection, it would probably be found that a very considerable proportion of herd owners outside the membership of milk recording societies are in one way or another testing and recording the milk yields of their herds who would never have done so had systematic or official milk recording not been in operation. The same consideration applies to the more enlightened methods of selecting, breeding, and feeding on milk record lines which have been adopted in many herds not officially recorded.

But there is another direction in which advantage from milk recording is penetrating widely beyond the ranks of milk recording societies. Milk recording has been credited in Scotland as being a primary factor in creating the so-called "surplus milk" position, which has led in recent years to large quantities of milk being thrown on city markets at prices considerably less than even the comparatively low contract rates. This is sufficient illustration of the fact that increased home production of milk tends to lower the cost to the urban populations, and that some portion of the return from milk recording is handed on beyond the actual milk producers. Indeed, the general economic position in the milk industry to-day supports the contention that the advantages of milk recording are to a very large extent absorbed in this direction. Even good-milking cows are leaving only a small margin of profit to the producer. On this consideration alone the very moderate annual grant from public funds is more than justified.

There remains a still wider aspect of the question. Large numbers of milk record bulls and young cows are exported annually, and go to maintain and improve the milking qualities of the dairy herds of the empire. Every stage of progress in this direction is a step forward to the goal of a self-supporting community of nations under the British flag.

It is evident, therefore, that there may be a genuine "development" other and more valuable than in numbers. And the question naturally arises as to how the very modest grant which has been given annually from the Development Fund for official or systematic milk recording in Scotland could be spent in any other direction to ensure a better return.

The suggestion has been put forward that the system of milk recording in Scotland might be reorganised somewhat on the lines of the system obtaining in England and Northern Ireland; that the farmer should take the records of his own herd weekly or more often, and the recorder visit and check only once in six weeks instead of once in twenty-one or twenty-eight days as at present; that two objects might be achieved

—the total cost of the scheme might be reduced by about one-third, and more members might be attracted.

The proposal was carefully considered in all its bearings by the Association and by the principal local societies. The discussion served merely to bring out a remarkable degree of unanimity in favour of continuing the present Scottish system of official recording. The change suggested would not be acceptable to members of local milk recording societies in Scotland. The Association as presently constituted was formed for the special purpose in a very real sense of carrying on official *authenticated* recording of milk yields along the lines previously adopted in Scotland, and according to a system based upon the Danish model, whereby the records would be made entirely by trained, disinterested, official recorders. To adopt the change proposed would be a distinct departure from these principles.

The Association were of opinion that the present method, which has been evolved and improved as experience has suggested during a period of twenty-five years, gives good results, combining in a practical way both milk yield and fat percentage. With the system of surprise tests or double tests in operation they believe they have the most practical and most reliable method of official recording. Tests at intervals of from twenty-one to twenty-eight days by official recorders have been proved by careful comparison with daily records to give results very close to the actual yields—see M'Candlish and M'Vicar, 'Scottish Journal of Agriculture,' Vol. VIII. No. 2, April 1925. The Scottish milk records have gained the confidence of buyers at home and abroad to a degree not attained in the comparatively few countries where herd owners weigh the milk of their own cows. No fewer than eighteen of the twenty-two countries previously referred to have milk recording systems in general principles similar to the Scottish system, including the countries showing the greatest progress and improvement.

The weighing and recording of the milk by the herd owners would, in the opinion of the Association, be a distinctly retrograde step, which would sacrifice reliability and intrinsic value without even reducing the total cost as suggested. The record of milk yields would be to a great extent unauthenticated, and would probably in many instances be compiled with considerable irregularity. Probably many of the herd owners would neglect this duty, particularly in busy seasons, and would fall into arrears with the recording, and might be tempted to put down estimated figures in the byre sheets for tests omitted. The value as an official record would be merely the estimate held of the character of the individual herd owner. Even with the best intentions the accuracy in many cases would be very doubtful. And with such a large

number of milk balances to be kept in good order the proportion of wrong entries would be considerable.

Fat testing would be reduced by almost a half, and would be inadequate for the purpose intended; and this at a time when the importance of high quality in milk is increasing rather than diminishing in view of the requirements of Certified Milk and Grade A Milk herds. And in progressive dairying countries milk is to an increasing extent being paid for on its butter fat basis.

The change proposed was intended to reduce the general working costs of local societies by approximately one-third, but any saving would be more apparent than real. At present the average size of officially recorded herds in Scotland is forty cows, so that about half of the herds tested consist of more than this number. Fifty to sixty cows are as many as the average recorder can test and record with respect to both milk yield and fat percentage in one day, allowing for the time required to remove to the next farm on the circuit. If in addition to his usual work the recorder had to deal with the six weekly evening and morning yields recorded by the herd owner, a very considerable increase in the clerical work would be involved, and the maximum size of herd that could be dealt with by the recorder in a visit of one day would be very materially reduced, and the proportion of two-day herds correspondingly increased. It is obvious that a two-day visit once in six weeks as compared with a one-day visit once in two and a half weeks would be no economy, but the reverse.

The herd owner would have to take upon himself the whole trouble of the weekly weighing of the milk, and the time involved at the very busiest periods of the day would be considerable. The weighing and recording falling to be done by the average herd owner would occupy him, or the smartest member of his dairy staff, about three hours weekly, or the equivalent of twenty working days throughout the year. The same time of an ordinary labourer would cost £10.

The Association were of opinion that the change proposed would be a backward step; that the records obtained would be unreliable, and therefore of no value as official records to the herd owners or prospective buyers of milk record stock; that it would entail considerable additional trouble and inconvenience or expense to the individual members; that it could not be expected to attract more members to local milk recording societies, but the reverse; and that under the system outlined the present proud position of Scotland among the dairying countries of the world could not be maintained.

Scotland is already fortunate in having two systems of milk recording in operation, each quite distinct and designed to serve a different class of dairy farmers. Those who attach primary importance to the authenticated character of the

record may join a local milk recording society, and would not be satisfied with a quasi-official record such as has been suggested. On the other hand, the herd owner whose immediate desire is merely to increase the milk yield of his herd by selecting, breeding, and feeding according to individual production, and who meantime attaches no value to the official character of a record, can adopt the system of private or unofficial recording. And if the voluntary principle in milk recording is to continue, extension of the movement is much more likely to be realised by continuing the two separate systems of recording and maintaining the essential features of the present scheme of official authenticated records.

ANALYSES FOR MEMBERS DURING 1927.

By Dr J. F. TOCHER, Aberdeen, Analyst to the Society.

THE number of samples submitted for analysis during the year 1927 was 228, of which 44 were fertilisers, 37 were feeding-stuffs, 54 were milks, 6 were creams, 26 were waters, 7 were silages, and 5 were soils. There were 12 examinations for poisons and 37 miscellaneous samples. The following table (Table I.) shows the number and nature of the samples analysed during the past six years:—

TABLE I.

	1927.	1926.	1925.	1924.	1923.	1922.
Fertilisers . . .	44	61	81	82	84	86
Feeding-stuffs . .	37	43	56	59	44	29
Waters . . .	26	26	51	35	37	23
Other samples . .	121	130	84	94	96	76
Total . . .	228	260	272	270	261	214

FERTILISERS.

General.—The fertilisers examined may be classified as follows:—

TABLE II.

Compound fertilisers . . .	16
Potash fertilisers . . .	3
Ground mineral phosphate . . .	3
Superphosphate . . .	1
Slags . . .	3
Nitrogenous and other fertilisers . . .	7
Limes and limestones . . .	11
	44

The average composition of compound fertilisers for 1927 was found to be 4.08 per cent nitrogen, 14.46 per cent soluble phosphate, 6.16 per cent insoluble phosphate, and 7.75 per cent potash. The nitrogen in the compound fertilisers ranged from 0.84 to 7.64 per cent. The variation in soluble phosphate was from 9.91 to 20.40 per cent. The proportion of insoluble

phosphate varied from 2.20 to 14.89 per cent, while the proportion of potash varied from 2.57 to 15.6 per cent. The following table (Table III.) shows the composition of the compound fertilisers examined during the year :—

TABLE III.

	Nitrogen.	Soluble phosphate.	Insoluble phosphate.	Potash.
Potato Manure	5.39	15.50	2.20	10.57
"	6.51	14.28	2.31	9.30
"	7.64	17.00	3.89	5.19
"	6.92	15.23	5.87	4.46
"	6.08	13.30	4.16	7.21
Grain Manure	5.91	14.06	3.20	3.30
"	7.27	13.76	2.78	2.57
Turnip Manure	3.73	13.10	7.88	3.27
"	3.70	14.04	11.13	4.70
"	1.79	17.31	14.89	5.77
Beet Fertiliser	3.16	10.83	4.15	13.50
"	4.01	17.98	3.50	7.24
Compound Manure	3.00	12.22	10.90	15.60
"	0.84	12.43	10.88	12.45
"	6.23	9.91	5.73	15.30
"	4.96	20.40	5.08	3.65

Two compound fertilisers were specially prepared for the cultivation of sugar beet. One sample contained 4 per cent nitrogen, 18 per cent soluble phosphate, and $7\frac{1}{2}$ per cent potash; while the other contained 3 per cent nitrogen, 11 per cent soluble phosphate, and $13\frac{1}{2}$ per cent potash. The samples of ground lime, eight in number, contained caustic lime in proportions varying from 37 to 80 per cent. Under the Act of 1926, all ground limes have to be guaranteed for the percentage of caustic lime. The samples of ground limestone contained over 90 per cent carbonate of lime. One sample contained, in addition to carbonate of lime, a quantity of sulphate of ammonia equal to 0.2 per cent. Since a mixture of carbonate of lime and sulphate of ammonia is a mixture from which ammonia is slowly liberated under ordinary conditions, it is not surprising that the proportion of ammonia found to be present was considerably below that stated in the guarantee. Under the Act of 1926 the amount of carbonate of lime in ground limestone must be guaranteed. It is to be hoped that, as a result of the inclusion of lime compounds in the schedules of the 1926 Act, there will be less variation, particularly in the proportion of caustic lime present in ground lime. Provision is also made in the schedules of the 1926 Act for a guarantee to be given as to the fineness of grinding of ground limestone. In the cases of basic slag and ground mineral phosphate, which are included in the

schedules of the Act of 1926, the particulars to be given by the seller in the statutory statement furnished by him, are the amount of phosphoric acid and the amount of the fertiliser which will pass through a prescribed sieve. This means that not only must the phosphatic content of the fertiliser be guaranteed but also the fineness of grinding, the object being to give an indication of the degree of availability of the phosphatic substances contained in the fertiliser. Any other statement than the fineness of grinding supplied by the seller should be ignored by the buyer, as no chemical test has yet been devised which indicates the availability of phosphate to plant life. A standard sieve has been prescribed under the new Act for use to test the fineness of grinding of fertilisers. This sieve has apertures corresponding in size to the well-known sieve containing 100 meshes to the linear inch. It is open to sellers to guarantee fineness of grinding through sieves with smaller apertures than the standard sieve. Such a guarantee would be valid under the new Act, but it is not compulsory for any seller to guarantee fineness of grinding except fineness of grinding as found from the results of the standard sieve. A sample of nitrate of lime was found to contain 12.6 per cent nitrogen. Nitrate of lime is usually guaranteed to contain $15\frac{1}{2}$ per cent of nitrogen. The slags examined contained about 36 per cent of phosphate, expressed as tricalcium phosphate, while a superphosphate contained 35 per cent. A sample of pigeon guano was found to contain 2 per cent nitrogen, 8 per cent phosphate, and 2 per cent potash. A sample of guano, labelled "Ascension Guano," was found to contain 9 per cent nitrogen, 46 per cent phosphate, and 2 per cent potash.

FEEDING-STUFFS.

A number of feeding-stuffs were analysed during 1927, including the usual feed-cakes and such feeding-stuffs as bean meal, compound meal, dried grains, meat meal, and fish meal. The following table (Table IV.) shows the results of analyses of feeding-stuffs :—

TABLE IV.

	Oil.	Albumin- oids.	Soluble carbo- hydrates.	Fibre.	Ash.	Mols- ture.
Cotton-seed Cake	4·67	19·50	34·65	22·10	5·14	13·94
"	5·45	18·50	34·67	23·32	5·57	12·49
"	9·27	39·87	...	...	...	...
"	4·23	23·32	32·51	24·75	4·68	10·51
"	5·20	21·75	33·90	21·56	5·22	12·50
Linseed Cake	12·88	28·37	...	...	...	...
"	7·25	31·00	36·48	9·90	5·10	10·27
"	6·85	31·37	35·56	8·70	5·52	12·50
Soya Cake	1·50	43·06	...	...	...	...
Ground Nut Cake	14·16	26·19	...	...	...	...
"	13·87	24·44	20·06	29·93	3·91	7·79
"	11·22	26·50	22·54	27·55	4·05	8·14
Dried Grains	9·38	23·18	39·07	13·25	5·65	9·47
"	6·41	14·94	42·99	22·39	3·49	9·78
"	5·86	22·44	41·33	16·69	3·85	9·83
Sunflower Cake	8·78	39·38	21·66	17·08	5·55	7·55
Bean Meal	1·53	21·31	53·14	5·40	4·82	13·80
"	1·83	19·81	54·44	7·17	4·02	12·73
"	1·55	22·44	51·84	5·70	4·67	13·80
"	1·92	19·81	57·18	4·84	4·34	11·91
Pig Meal	6·10	16·12	52·26	6·87	6·55	12·10
Compound Cakes and Meal	6·45	16·37	52·97	6·78	6·93	10·60
"	7·45	13·44	51·94	6·20	7·25	13·72
"	7·89	19·13	41·22	8·13	9·00	14·63
"	10·51	21·31	40·37	9·25	6·65	11·91
"	6·75	18·61	46·10	11·16	4·70	12·78
"	16·38	16·69	39·94	5·40	10·70	10·89
Palm Kernel	5·31	18·44	48·61	12·12	4·02	11·50
Dairy Meal	9·05	28·62	34·15	8·26	10·27	9·65
Skimmings	0·43	2·25	81·47	1·90	2·00	11·95
Meat Meal	17·56	44·00	...	...	...	...
"	11·01	38·00	...	...	...	...
"	...	48·75	...	...	...	...
"	13·74	50·00	...	...	...	...
"	14·23	47·06	...	...	...	6·26
"	13·02	42·34	...	...	...	4·55
Fish Meal						

Insoluble Phosphate 19·72.

The usual guarantee for cotton-seed cakes (undecorticated) was $4\frac{1}{2}$ per cent of oil, and the samples sent in were up to the guarantee within the limits of error prescribed. The percentages of albuminoids found to be present varied from 18 to 23 per cent. A sample of decorticated cotton cake was found to contain 9 per cent oil and 40 per cent albuminoids. Among the linseed cakes analysed was a sample containing 13 per cent oil and 28 per cent albuminoids, a very unusual proportion of oil for a linseed cake. The samples of ground nut cake contained about 12 per cent oil and 25 per cent albuminoids. A sample of sunflower cake contained 8 per cent oil and 39 per cent albuminoids. The proportion of fibre was fairly high—namely, 17 per cent. The samples of compound cakes and meals contained from 6 to 8 per cent oil, and from 13 to 21 per cent albuminoids. All the samples except one contained less than 8 per cent of fibre. The samples of meat meal contained about 12 per cent fat, and albuminoids from 38 to 50 per cent. One sample of meat meal contained as much as 17 per cent of fat. Dried grains were, as usual,

found to be of variable composition. The proportion of oil found to be present varied from 5 to 9 per cent, while the albuminoids varied from 15 to 23 per cent. One sample contained as much as 22 per cent of fibre. All the bean meals examined were genuine, and contained about the average of the constituents usually present in bean meal.

VARIATION IN THE COMPOSITION OF LINSEED CAKE.

It may be useful for members to know how the percentages of oil and albuminoids vary in linseed cake. The following table (Table V.) shows the various percentages of oil associated with the various percentages of albuminoids in 98 samples. The numbers in the body of the table are numbers out of 98 samples containing the amounts of oil and albuminoids as shown on the margins of the table. For example, there were 5 samples containing from 10 to 11 per cent of oil, and from 28 to 29 per cent of albuminoids. It will be seen that 30 samples of linseed cake contained from 10 to 11 per cent of oil, and that the proportion of albuminoids was not constant for the 30 samples. The percentage of albuminoids varied from 24 per cent to 36 per cent. Similar tables have been prepared for decorticated cotton cake and undecorticated cotton cake.

TABLE V.—LINSEED CAKE—OIL PERCENTAGE.

Range.	7'01-8'00	8'01-9'00	9'01-10'00	10'01-11'00	11'01-12'00	12'01-13'00	13'01-14'00	14'01-15'00	15'01-16'00	Totals.
Albuminoids Percentage	24'01-25'00	..	..	2	..	..	1	..	..	3
	25'01-26'00	..	..	1	4	..	..	..	..	6
	26'01-27'00	..	1	2	7	5	1	..	1	22
	27'01-28'00	..	2	2	7	1	2	..	..	16
	28'01-29'00	1	3	2	5	7	3	1	..	22
	29'01-30'00	..	3	3	2	3	1	1	..	13
	30'01-31'00	..	..	3	4	..	1	..	..	8
	31'01-32'00	..	..	2	1	..	..	..	..	4
	32'01-33'00	1	..	..	..	..	..	..	..	1
	33'01-34'00	..	..	1	..	..	..	..	..	1
	34'01-35'00	..	1	..	..	..	..	..	..	1
	35'01-36'00	..	..	..	1	..	..	..	..	1
Totals .	2	10	16	30	21	11	6	1	1	98

The figures in the body of the table are the numbers of samples with oil and albuminoids as given in the margin.

TABLE VI.—DECORTICATED COTTON CAKE—OIL PERCENTAGE.

Range.		6'01-7'00	7'01-8'00	8'01-9'00	9'01-10'00	10'01-11'00	11'01-12'00	Totals.
Albuminoids Percentage	35'01-36'00 .	..	1	..	..	..	..	1
	36'01-37'00 .	1	1	..	1	..	..	3
	37'01-38'00 .	..	1	1	1	1	..	4
	38'01-39'00 .	1	2	..	2	..	..	5
	39'01-40'00 .	..	1	..	1	2	1	5
	40'01-41'00 .	..	..	1	..	..	..	2
	41'01-42'00 .	..	2	..	..	..	..	2
	42'01-43'00 .	..	..	1	..	..	..	1
Totals .		3	8	3	5	3	1	23

The figures in the body of the table are the numbers of samples with oil and albuminoids as given in the margin.

TABLE VII.—UNDECORTICATED COTTON CAKE—OIL PERCENTAGE.

Range.		3'51-4'00	4'01-4'50	4'51-5'00	5'01-5'50	5'51-6'00	6'01-6'50	6'51-7'00	Totals.
Albuminoids Percentage	17'01-18'00 .	..	2	1	..	..	..	..	3
	18'01-19'00 .	1	5	7	11	2	1	..	27
	19'01-20'00 .	..	3	9	10	3	1	..	26
	20'01-21'00 .	1	..	2	5	..	..	1	9
	21'01-22'00 .	..	..	1	4	3	1	1	10
	22'01-23'00 .	..	..	..	2	..	..	1	3
	23'01-24'00 .	..	..	..	1	..	..	..	1
Totals .		2	10	20	33	8	3	3	79

The figures in the body of the table are the numbers of samples with oil and albuminoids as given in the margin.

Ensilage.—All the samples of ensilage examined, except one, were found to be in good condition when received for analysis. The proportion of moisture present in the normal samples varied from 69 to 78 per cent. One sample was found to be in a very wet condition, containing as much as

82 per cent of water. The proportion of oil varied from 1.4 to 2.1 per cent, while the albuminoids varied in proportion from 2.1 to 3.3 per cent. Soluble carbohydrates ranged from 7.6 per cent to 14.84 per cent. One sample of silage was found to be rancid, and to contain a considerable proportion of sand.

Milks.—It will be seen from the following table (Table VIII.) that of the 54 samples of milk examined during the year, 5 were found to be below the presumptive limit of 3 per cent butter-fat prescribed by the Board of Agriculture, 5 were below the presumptive limit of 8.5 per cent solids not fat, while 3 were below these limits in both constituents :—

TABLE VIII.—MILKS.

No.	Fat, per cent.	Solids not fat, per cent.	No.	Fat, per cent.	Solids not fat, per cent.
1	6.45	9.85	28	3.60	8.69
2	5.25	9.19	29	3.55	8.87
3	5.20	9.01	30	3.52	8.53
4	5.00	9.40	31	3.60	—
5	4.60	8.93	32	3.45	—
6	4.55	—	33	3.40	9.37
7	4.50	9.07	34	3.40	7.91
8	4.30	8.83	35	3.30	8.54
9	4.24	8.17	36	3.30	8.53
10	4.12	—	37	3.25	8.51
11	4.12	8.51	38	3.20	9.21
12	4.10	7.50	39	3.10	8.87
13	4.10	—	40	3.00	8.79
14	4.00	—	41	3.00	8.50
15	3.95	—	42	2.72	8.52
16	3.90	8.91	43	2.84	8.24
17	3.90	8.70	44	2.25	8.93
18	3.90	—	45	2.00	9.19
19	3.80	8.91	46	1.95	—
20	3.80	9.46	47	1.82	8.24
21	3.75	8.55	48	1.76	8.81
22	3.66	—	49	1.55	6.67
23	3.65	8.24	50	3.50	8.94
24	3.60	8.72	51	3.14	—
25	3.60	8.61	52	3.62	8.67
26	3.60	8.78	53	3.03	—
27	3.60	8.23	54	3.21	8.54

The proportion of butter-fat in the 54 samples varied from 1.55 to 6.45 per cent, the average being 3.58 per cent. The proportion of solids not fat varied from 6.67 to 9.85 per cent, the average being 8.68 per cent.

In the analyses of 676 samples of genuine milk from individual cows, the results of which are given in my monograph on "Variations in the Composition of Milk," published by H.M. Stationery Office, only one sample gave as low a

proportion as 6·8 per cent solids not fat. This sample contained 3·4 per cent butter-fat. As many as 11 samples of milk from individual cows out of the 676 were found to contain percentages of solids not fat varying from 7·1 to 8 per cent. From the above table it will be seen that No. 12 contained 7·5 and No. 34 contained 7·91 per cent of solids not fat.

A fact of practical importance to dairy farmers is the relationship of the percentage of butter-fat to the percentage of solids not fat in the bulked milk of a herd. I have shown, in the publication just referred to, that dairy cows which are good butter-fat producers are, on an average, good solids not fat producers. This means that if the bulked milk of a herd was high in butter-fat it was also above the average in solids not fat, and *vice versa*. This result must not, however, be confused with the result obtained from the *daily* samples of milk from the *same* herd. When the same cows were observed day after day, it was found that there were less variations in the percentages of total solids, solids not fat and butter-fat, than the corresponding variations found from different herds. If a herd gave every day exactly the same amount of total solids (that is butter-fat, *plus* solids not fat) it is clear that, if the percentage of butter-fat was high on a particular day, the percentage of solids not fat would be correspondingly lower. For example, if the amount of total solids was 12 per cent, the butter-fat being 3·25 per cent, the solids not fat would be 8·75 per cent. If the butter-fat next day rose to 4 per cent, the solids not fat would fall to 8 per cent. An individual herd does not, however, give exactly the same proportion of total solids every day, but tends to do so, the variation being slight from day to day. The result is that a rise of butter-fat in the milk of a herd, compared with the previous day, is accompanied by a comparatively slight decrease in the proportion of solids not fat. The importance of this fact will be seen in cases where byre samples are taken by a local authority, after an official sample has been analysed and the milk found to be below the prescribed presumptive limit, either in butter-fat or in solids not fat. The writer has shown elsewhere that it is quite erroneous to expect to get milk of the same composition on succeeding days from any herd. It is very desirable, in the interests of the dairy farmer and of the public, to have daily samples analysed from herds in various parts of the country, in order to ascertain exactly the extent of the daily variations of herds of various sizes.

Soils.—The following table (Table IX.) shows the results of analyses of five soils. It will be seen that three of these are to be regarded as acid soils. Nos. 2 and 4 are almost neutral, and require only a dressing of about 1 ton of car-

bonate of lime for neutralisation ; while No. 5 requires from 8 to 9 tons for proper neutralisation.

TABLE IX.

Stones.	Sand.	Fine Earth.	Moisture.	Loss on Ignition.	Nitrogen.	Total Lime.	Total Phosphate.	Total Potash.	Total Magnesia.	Lime requirement.
9.5	4.7	85.8	3.00	5.16	0.11	.395	.118	.436	.436	Nil.
25.3	11.9	62.8	4.38	11.98	0.36	1.157	.339	.334	.737	.08
7.0	8.5	84.5	3.68	10.28	0.28	1.055	.351	.307	.227	Nil.
16.7	5.5	77.8	3.80	7.96	0.24	.588	.093	.275	.393	.110
12.07	11.6	76.3	4.32	11.96	0.35	1.420	.520	.360	.100	.84

Waters.—Of the 26 samples of water analysed, 23 were found to be of sufficiently good quality to be passed for domestic use. Two samples were of bad quality and one sample was found to be plumbo-solvent—that is to say, it was capable of dissolving lead in such a proportion as to render the water unsafe for domestic use.

Examinations for Poisons.—Of the twelve examinations for poisons, eight were found to be quite free from any poisons or poisonous substances. There was one case of salt poisoning, and there were two cases of poisoning by antimony. It should be pointed out that, in several cases, only a portion of the stomach lining, or a small portion of the stomach contents, was sent for analysis. This is not sufficient if the object is to determine whether or not the animal died from poisoning. Portions of the stomach and bowel contents, as well as portions of the stomach and bowel, should be sent for examination, together with any report given by a veterinary surgeon.

Miscellaneous.—Among the miscellaneous samples was a sample of a remedy recommended for dysentery. The sample was found to consist of bismuth salicylate, mixed with finely ground kaolin. This is a mixture of substances of proved value in many cases of dysentery among farm animals. Two samples of sugar beet were examined, and were found to contain 14 and 16 per cent of sugar respectively. A sample of agricultural salt was found to contain alkali in an amount sufficient to liberate ammonia when mixed with sulphate of ammonia. In such a case a mixture of salt and sulphate of ammonia should not be made. Analyses were made of two samples of horn, one Sussex deer horn and the other red-deer horn. The horns contained practically the same proportion of phosphate, about 50 per cent. The proportion of nitrogen was found to be about $5\frac{1}{2}$ per cent.

. FERTILISERS AND FEEDING-STUFFS ACT, 1926.

In conclusion, I should like to say that the Advisory Committee under the Fertilisers and Feeding-Stuffs Act of 1926 has submitted its first report to the Central Authority. The most likely date for bringing the Act into operation is the 1st July 1928.

I have drawn up in the following tables (Tables X. and XI.) a list of fertilisers and feeding-stuffs taken from the schedules in the Act, and the particular constituent or constituents the percentages of which must be guaranteed in each case.

TABLE X.

Constituents to be Guaranteed.	Name of Fertiliser.
Phosphoric acid.	Basic superphosphate.
Soluble phosphoric acid.	Superphosphate.
Phosphoric acid and fineness of grinding.	Basic slag, ground mineral phosphate.
Nitrogen and Phosphoric acid.	Bone meal, fish residues (fish guano), meat and bone residues.
Nitrogen.	Calcium cyanamide, hoofs and horns, hoofs, horns, nitrate of lime, nitrate of soda, oil seed fertilisers, sulphate of ammonia neutral, dried blood.
Nitrogen and free acid.	Sulphate of ammonia.
Nitrogen, potash, soluble phosphoric acid, and insoluble phosphoric acid.	Compound fertilisers.
Nitrogen, soluble phosphoric acid, and insoluble phosphoric acid.	Dissolved bones.
Nitrogen, phosphoric acid, and potash.	Peruvian and other raw guanos.
Potash.	Potash salts— <i>e.g.</i> , kainit, sylvinit, potash manure salt, muriate of potash, sulphate of potash (sulphate of potash magnesia).

TABLE X.—*continued.*

Constituents to be Guaranteed.	Name of Fertiliser.
Calcium oxide.	Ground quicklime.
Calcium carbonate and fineness of grinding.	Ground limestone.
Calcium hydrate.	Slaked lime.
Calcium carbonate.	Ground chalk.

TABLE XI.

Constituents to be Guaranteed.	Name of Feeding-Stuff.
Oil and albuminoids.	Coco-nut or copra cake or meal. Cotton cakes or meals, undecorticated. Feeding meat meal. Linseed cakes and meals of such cakes. Maize germ cake or meal. Maize gluten feed. Oil cakes or meals (from any one undecorticated substance or seed from which oil has been removed). Palm kernel cake or meal. Rape cake or meal. Soya cake or meal. Dried grains (brewery or distillery).
Oil, albuminoids, and fibre.	Compound cakes or meals. Cotton cakes or meals (decorticated or partly decorticated). Maize by-products. Oil cakes or meals from decorticated substances (from which oil has been removed). Rice bran or rice meal.
Fibre.	Wheat offals or millers' offals, clover meal.
Sugar and fibre.	Dried sugar beet residue, molasses feeds.
Sugar.	Treacle or molasses.
Albuminoids and phosphoric acid.	Feeding bone flour.

TABLE XI.—*continued.*

Constituents to be Guaranteed.	Name of Feeding-Stuff.
Oil, albuminoids, and phosphoric acid.	Feeding meat and bone meal.
Oil, albuminoids phosphoric acid, and salt.	Fish meal and white fish meal.
No guarantee necessary.	Barley meal, locust bean meal, wheat meal, bean meal, maize meal, dari meal, Indian meal, ground oats, pea meal.

In my last report I gave a fairly full summary of the provisions of the new Act. It may prove useful to members to give a brief statement of the rights of purchasers and as to the nature of the warranty.

Separation of Civil from Criminal Proceedings.—Under the new Act, the procedure relating to the civil rights of purchasers is entirely separated from the procedure provided for dealing with cases of fraud. Both Acts require the seller to give certain warranties. Under the Act of 1906, the purchaser who causes a sample to be taken and analysed with a view to testing the correctness of the warranty, may find himself involved as a witness in a prosecution against the seller on a charge which is practically a charge of fraud. The new Act is framed on the assumption that, with articles so liable to variation as fertilisers and feeding-stuffs, there may be many cases of deficiencies below the guarantee due not to fraud, but to unavoidable accidents. Under the Act of 1926 there will be no prosecutions in respect of samples taken on the farm, and the purchaser can therefore have a sample taken by an Official Sampler on his premises without fear of involving himself or the seller in criminal proceedings. All he has to do is to notify the Official Sampler and pay the fee (if any) fixed by the Local Authority.

The Warranty.—The warranty required by the Act of 1906 is only a warranty that the amounts of valuable ingredients in the article do not differ from those stated in the invoice by more than the limits of variation. Thus if the percentage stated is 30 per cent and the limit of variation is 1 per cent, and the article contains 28.5 per cent, the purchaser could only claim compensation for a deficiency of 0.5 per cent. Under the new Act the warranty will be that the percentage does not differ from that stated in the guarantee, with a proviso that, if the deficiency is within the limits of variation,

no action shall lie. In the case stated above, the purchaser could therefore claim for 1·5 per cent instead of 0·5 per cent.

Definition of Terms.—Many names of fertilisers and feeding-stuffs such as guano, fish meal, and barley meal have been so loosely used by sellers and purchasers that misunderstandings have arisen as to the nature of the article offered for sale. The Fourth Schedule of the new Act contains a list of names of the principal fertilisers and feeding-stuffs, with a definition of the recognised meaning of each, and the Act provides that the use in a statutory statement, or other document of a name included in this schedule, shall have effect as a warranty that the article accords with the definition given in the schedule. The purchaser, therefore, of any article under a name included in this schedule will know exactly what it is that he has a right to receive.

Criminal Provisions.—The new Act provides for official supervision of the fertilisers and feeding-stuffs trade by requiring that the seller shall apply a description giving certain particulars to the articles while on his premises, and making it an offence to apply a false description to, or to give to, the purchaser a statutory statement containing particulars differing from those contained in the description. If the description is correct and the statutory statement corresponds with it, the particulars given to the purchaser must also be correct. Members are, however, only indirectly interested in the criminal provisions. These are for the Local Authorities and their officers. The prospect of any member being required to give evidence in such a proceeding is so remote as to be negligible.

THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1927.

THE following comparison of the cereal and other crops of 1927 with those of the previous year has been prepared by the Secretary of the Society from answers to queries sent to leading agriculturists in different parts of the country.

The queries issued by the Secretary were in the following terms:—

1. What was the quantity, per imperial acre, and quality of grain and straw, as compared with last year, of the following crops? The quantity of each crop to be stated in bushels. What quantity of seed is generally sown per acre?—(1) Wheat, (2) Barley, (3) Oats.
2. Did the harvest begin at the usual time, or did it begin before or after the usual time? and if so, how long?
3. What was the quantity, per imperial acre, and quality of the hay crop, as compared with last year, both as regards ryegrass and clover respectively? The quantity to be stated in tons and cwts.
4. Was the meadow hay crop more or less productive than last year?
5. What was the yield of the potato crop, per imperial acre, as compared with last year? The quantity to be stated in tons and cwts. Was there any disease? and if so, to what extent, and when did it commence? Were any new varieties planted, and with what result?
6. What was the weight of the turnip crop, per imperial acre, and the quality, as compared with last year? The weight of the turnip crop to be stated in tons and cwts. How did the crop braird? Was more than one sowing required? and why?
7. Were the crops injured by insects? State the kinds of insects. Was the damage greater or less than usual?
8. Were the crops injured by weeds? State the kinds of weeds. Was the damage greater or less than usual?
9. Were the pastures during the season of average growth and quality with last year?
10. How did stock thrive on them?
11. Have cattle and sheep been free from disease?
12. What was the quality of the clip of wool, and was it over or under the average?

From the answers received, the following notes and statistics have been compiled :—

EDINBURGH DISTRICT.

MID-LOTHIAN. *Wheat*—32 to 46 bushels per acre; variable crop; many yields less; heavy crop of straw, about 40 cwt. per acre; grain only fair quality as large areas of crop laid; 4 bushels per acre sown. *Barley*—40 bushels per acre, but crops varied and many badly laid, with poor quality grain; straw fully 1 ton per acre, but some very poor quality; 3 to 4 bushels per acre sown. *Oats*—40 to 60 bushels per acre; variable crops, many badly laid and twisted; quality showed considerable variation; straw 25 to 30 cwt. per acre, most of it poor and inferior quality; 4 to 6 bushels per acre sown. *Harvest*—Later than usual. *Hay*—50 to 60 cwt. on good land; quality fair. *Meadow Hay*—Not much grown. *Potatoes*—8 tons per acre; a lot of disease in many places in the lates and Great Scot; did not keep well in the pits; varieties planted much as usual. *Turnips*—15 to 25 tons per acre; quality fair; many poor crops to be seen; braird varied considerably. *Insects*—Not much in evidence. *Weeds*—Much greater damage than usual from annual weeds, which were difficult to keep down owing to continual wet weather. *Pastures*—Plenty of growth, but quality poor. *Live Stock*—Throve only fairly. Cattle and sheep free from disease. *Clip of Wool*—Quite an average.

EAST LOTHIAN (Upper District). *Wheat*—40 bushels per acre; quality below the average, with a large percentage of light grain; straw 40 cwt. per acre; above the average; quality not so good, much of crop lodged compared with former years. *Barley*—38 to 40 bushels per acre; much below the average; quality much inferior, large quantities of crop being lodged too early. With continuance of bad weather crop got too ripe; some bushels were lost in harvesting; straw 25 cwt. per acre; inferior quality. *Oats*—56 bushels per acre; below the average; suffered from premature lodging with a larger quantity of light grain; quality destroyed by weather; straw 30 cwt. per acre; quality inferior. *Harvest*—About a week later than usual, and very prolonged on account of bad weather. *Hay*—40 cwt. per acre; not so heavy as last year; quality fair where early harvested; weather not so suitable later. *Meadow Hay*—None grown. *Potatoes*—Crop varied very considerably; where spraying was carried out a good crop was lifted, and it was fairly free from disease; Majestics, Great Scot, and Arran Chief from 8 to 10 tons per acre; King Edwards and Kerr's Pink 6 to 7 tons per acre; where not sprayed small crops and much disease in Pinks and Scots. *Turnips*—Crop under the average; too much wet weather, which affected the crop on heavy land; where seeded early 20 tons, later 15 tons; quality under the average. *Insects*—No injury. *Weeds*—More weeds than usual in all green crops on account of the wet and unseasonable summer being against horse and manual labour. *Pastures*—Above the average in quantity; quality suffered on account of excessive rain. *Live Stock* did not thrive satisfactorily owing to excessive rain. Cattle and sheep free from disease. *Clip of Wool*—A full average clip.

EAST LoTHIAN (Lower District). *Wheat*—36 to 48 bushels per acre; crop would have been quite good had normal harvesting weather prevailed, but the extraordinary bad harvest weather upset all quality expectations; 3 to 4 bushels per acre sown. *Barley*—36 to 48 bushels per acre; crop partially ruined by bad weather, and in consequence samples varied considerably; otherwise crop would have been quite good. *Oats*—Wet weather caused the crop to be hopelessly lodged, and the wet harvest made matters worse; yields low; quality poor; 36 to 56 bushels per acre; seed sown, 4 bushels of Potato oats, $5\frac{1}{2}$ bushels of thick-skinned varieties per acre. *Harvest*—Commenced about a week or ten days later than average; soft heavy crops not easily cut, and a wet harvesting period completed a situation about the most difficult on record. *Hay*—A good crop; $2\frac{1}{2}$ to 3 tons per acre. *Meadow Hay*—A fair crop; the cold summer was against it. *Potatoes*—The cold wet summer made yields light, then disease affecting all crops, especially King Edwards, made crops small; 3 to 6 tons per acre a general thing. *Turnips*—A very small crop; summer too cold and wet. *Insects*—Not much damage. *Weeds*—Wet summer was against crop cleaning. *Pastures*—Not too good a grazing season. *Live Stock* thrived fairly well. Cattle and sheep free from disease. *Clip of Wool*—About an average clip.

BORDER DISTRICT.

BERWICKSHIRE (Merse). *Wheat*—The acreage under wheat for 1926-27 was almost double that of the previous year on account of the better opportunity afforded for sowings by an early harvest in 1926 and reasonably good autumn; usually 4 bushels per acre seed sown, occasionally 3 bushels when sown early; though laid by harvest time, the crop did not cause much trouble in cutting; grain was wonderfully good quality considering the season, and proved the best of the cereals, yielding from 32 to 40 bushels per acre, natural weight 60 lb., with a known instance of 60 bushels after sugar beet; straw of a good length but very brittle, 27 cwt. per acre. *Barley*—Weather conditions were all against barley—late in being sown; never looked really well; seeding from $2\frac{1}{2}$ to 3 bushels per acre; a crop of average bulk, considerably laid and twisted by harvest time; actual damage by sprouting was not very serious; but the grain was poor quality, thin and grey, and running very badly; from 22 to 36 bushels per acre, natural weight 50 lb.; straw poor quality; 22 cwt. per acre. *Oats*—In many instances a bankrupt crop before it was cut; a deplorable mess; much was never properly cut; seeding 4 to 6 bushels per acre, depending on variety; grain varied considerably in quantity and quality; the laid crop was very poor, yield 30 to 50 bushels per acre, natural weight 38-40 lb.; straw damaged for fodder; 24 cwt. per acre. *Harvest*—Ten days later than usual, 5th September, and was very protracted, a finish being hardly made by the end of October, cutting being the chief hindrance. *Hay*—A useful crop, was much spoilt and wasted in making, very little good hay being got; 35 to 38 cwt. per acre. *Meadow Hay*—More productive, but considerably spoilt; 27 cwt. per acre. *Potatoes*—Under an average crop and very variable; from 2 to 5 tons per acre of

small-sized tubers ; disease showed on the haulms in July, but the tubers did not become affected to any extent. *Turnips*—Turnips, 16 tons per acre ; swedes, 22 tons per acre ; quality of both generally poor ; braided very well, with little or no resowing. *Insects*—None, except that some fields of oats were slightly grubbed. *Weeds*—Runch was rather less prevalent than usual ; thistles were very much in evidence in pasture. *Pastures*—Rather more than average growth and of inferior quality, affording no feed in the autumn. *Live Stock*—Considering the type of summer, sheep stocks did fairly well ; lack of sun was detrimental ; grazing cattle put in a bad season. Cattle and sheep were free from disease, except foot-rot amongst sheep, which was very prevalent all year ; hooves softened by continuous damp. *Clip of Wool*—A full average of good quality.

BERWICKSHIRE (Lammermoor). *Wheat*—Practically none grown. *Barley*—About an average crop for quantity, but quality very inferior ; much of the crop laid and twisted. *Oats*—Under the average ; poor quality grain ; a great deal of the crop was badly laid and not properly filled, the crop going down in many cases in early summer ; yield would be on an average under 40 bushels per acre ; full yield of straw. *Harvest*—Was a fortnight later than usual ; the weather was bad, and harvest very protracted and difficult. *Hay*—Yield of hay about an average—around 2 tons per acre ; the quality of most of the hay was very inferior, much being entirely ruined by rain and floods. *Meadow Hay*—About an average crop ; poor quality. *Potatoes*—Greatly below the average ; considerable disease. *Turnips*—Below the average yield ; excessive moisture soured the land and stopped growth, especially on heavy soil. *Insects*—Not much damage by insects ; about the same as last year. *Weeds*—Turnip crop very dirty, and impossible to get the crop properly cleaned due to the sodden state of the land practically all summer. *Pastures*—Full average growth, but quality rather inferior. *Live Stock* did not thrive so well as during the last few summers ; more sun required, especially for young stock. Cattle and sheep free from disease. *Clip of Wool*—Full average clip of good quality.

ROXBURGHSHIRE. *Wheat*—A fair amount grown ; some after wild white clover ; 10 to 14 bags per acre ; $3\frac{1}{2}$ to 4 bushels per acre sown. *Barley*—A poor crop, badly laid ; a good bulk of straw ; yield about 7 bags per acre ; $2\frac{1}{2}$ to 3 bushels per acre sown. *Oats*—A bulky crop ; badly laid and much destroyed by the weather ; in many places it was never cut ; where harvested a good yield in many places ; 24 to 40 bushels per acre ; seed sown 4 to 6 bushels per acre. *Harvest*—Began the latter end of September, and finished in December according to circumstances. *Hay*—A good crop, but a great deal of it destroyed by weather ; ryegrass, 2 tons per acre. *Meadow Hay*—About the same as last year ; a good deal of it led after harvest. *Potatoes*—Varied greatly ; from 2 to 10 tons per acre ; a good deal of disease ; no particular new varieties. *Turnips*—Turnip crop disappointing ; on dry land it was quite a good crop ; on a great deal of land the drains were defective owing to leading drains being choked by roots, and a lack of skilled drainers to put them in order ; on such land crop was only 10 tons per

acre; on a good deal of light land finger-and-toe was bad, but in places it has disappeared. *Weeds*—A great deal of the land was never cleaned; in fact could not be cleaned owing to wet weather. *Pastures*—A growthy year; pastures in many places too rough. *Live Stock*—Sheep thrive fairly well on the whole; cattle grazed well, but many did not get fat. Cattle and sheep not entirely free from disease; some dysentery amongst lambs; a good deal of udder disease amongst breeding ewes; where treated joint ill was not serious; scrapie has decreased where precautions were taken by stock owners. *Clip of Wool*—Average clip of good quality.

SELKIRKSHIRE. *Wheat*—None grown. *Barley*—32 bushels per acre. *Oats*—36 bushels per acre on two-thirds of the acreage; 16 bushels per acre on one-third; the latter portion difficult to estimate; indeed two fields near Galashiels (over 40 acres) were never harvested, just mowed and roughly burned. *Harvest* began a fortnight later. *Hay*—2 tons per acre. *Meadow Hay*—Quite an average crop, but very little secured in good order; mostly damaged, and a very considerable quantity entirely wasted. *Potatoes*—4 to 6 tons per acre; there were diseased patches. *Turnips*—Were late and crop unequal; a third less than last year; weather unfavourable. *Insects*—No injury by insects. *Weeds*—No damage, but there was more ordinary rack, &c., owing to the wet season. *Pastures*—There was plenty of grass, but owing to the season not of good quality. *Live Stock* did not put on condition as well as usual. Cattle and sheep free from disease. *Clip of Wool*—Average clip of good quality.

DUMFRIES DISTRICT.

DUMFRIES (Annandale). *Wheat*—None grown. *Barley*—Very little, if any, now grown. Owing to the poor returns per acre and the poor demand for home-grown barley during the last few years, farmers in this district have given up the growing of this cereal. *Oats*—Well above the average as to bulk, but the quality of both grain and straw was the worst for many years. Yield—grain 30 bushels per acre; straw 30 cwt. per acre; seed sown 4 to 6 bushels per acre according to variety. Sowing started in a few cases about the 12th March, but a spell of very wet weather set in about the 18th March, continuing until about the 2nd April, and consequently sowing did not become general until about the 4th April, seed time thus being more than a fortnight later. During April mild warm weather continued, and the braird came away quickly. A very wet mild summer followed, and crops of oats everywhere showed promise of being extra good, but during the latter part of July very heavy rains came on and continued intermittently right through August, and crops of all kinds were laid, twisted, and damaged beyond all hope of recovery. *Harvest* started about the 20th August under the very worst conditions possible, and finished about the 15th October. The ingathering of the 1927 crop will be put down as one of the costliest and most unprofitable in the memory of the oldest inhabitants of the district. *Hay*—Ryegrass was a good crop in most cases, but the quality was poor, very little of it being got without rain; yield about 30 cwt. per acre. *Meadow Hay* was well up to the average as to bulk, but the quality was very

poor, whole fields lying in the swathe for a fortnight, and when got was of very little value. Some farmers abandoned cutting and turned their stock on to the meadows to graze. Yield 30 cwt. per acre. *Potatoes* were rather a poor crop in many cases, and all over would be below the average. Yield 5 tons per acre. The season all through was far too wet for this crop, and a good deal of disease was noticeable. *Turnips*—One of the worst crops for many years. Yield 8 tons per acre. The conditions at the time of sowing were fairly good, and the seed braided well, but hard frosts in the early morning, followed by bright sunshine, soon withered up the young plants, and second, third, and in some cases fourth sowing was resorted to, with the result that, owing to the continuation of wet weather and lateness of the season, very poor crops were got. Weeds seemed to be excessive everywhere. *Insects*—Turnip-fly did a great deal of damage during the early part of the season; grub did little or no damage to the oat crop. *Weeds*—In the oat crop very little harm was done, the braird getting well away early in the season, and weeds did not get a chance to get established. In the turnip crop weeds of every kind grew luxuriantly, and no check on them could be made. The extremely wet state of the land made the cleaning of turnips impossible. *Pastures* everywhere were very good, and on a great many farms the grass became far too strong, and consequently both sheep and cattle stock did not do so well. *Live Stock*—Disease among all farm stock was about normal. *Clip of Wool*—Quality and quantity rather above that of last year.

DUMFRIES (Nithsdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—Ripened later than last year. *Harvest*—A week to ten days later than usual; a very wet and slow harvest. *Hay*—Quite a good crop, but not got so well as last year in the majority of cases; an average yield. *Meadow Hay*—Smaller crop than last year. *Potatoes*—About one-third less; some water-stain and a little disease. *Turnips*—More or less a complete failure, except in a few isolated cases; slow braird. *Weeds*—Crops choked out of existence by weeds. *Pastures*—Not so good as last year. *Live Stock*—Stock did almost as well as last year. Cattle and sheep free from disease. *Clip of Wool*—A good average clip.

DUMFRIES (Eskdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—Very heavy crop but generally very badly laid and twisted; in many cases was mowed with scythe, and was never bound but just led like hay. As a great deal of grain was shaken off, it thrashed out very badly, and was about 28 to 30 bushels per acre and not good quality; straw also was not good quality, but plentiful; about 6 bushels per acre sown. *Harvest*—Commenced just about usual time. *Hay*—Ryegrass was a fairly good crop, and in most cases the quality was good, as it was mostly well got. *Meadow Hay*—In early places some very good, but in later places the weather broke before any was got, and it was very difficult to secure; a lot of bad hay. *Potatoes*—A better crop than last year and not much disease—much less than was expected after the very wet season. No new varieties were planted. *Turnips*—The crops were mostly disappointing; there was a good deal of resowing, and then weeds seemed to get the better of plants after being thinned; as the weather was continually wet it was impossible to work

horses among them to get weeds kept down. In most places the crop was light. *Insects*—No damage by insects. *Weeds*—Damage by spurrey and redshank greater than usual owing to the wet weather. *Pastures*—Rather more than average growth, but quality not so good as last year. *Live Stock*—Stock did well. Cattle and sheep free from disease. *Clip of Wool*—Good average clip and quality.

KIRKCUDBRIGHTSHIRE. *Wheat*—None grown. *Barley*—None grown. *Oats*—Crops grown on lea were heavy and badly laid, which, aggravated by persistent wet weather, made the harvest difficult and costly. Having lodged while still young and green, the ears did not fill well, and the yield was deficient and corn light. Crops succeeding fallow fared better and yielded well, although the quality was 75 per cent middling. There was little good grain anywhere. *Harvest* was a fortnight late, and protracted. *Hay*—A heavy crop, in excess of last year by 10 cwt. per acre, and fairly well got; yield about 50 cwt. per acre. *Meadow Hay*—Heavier crop than last year, but met with worst possible conditions in making; much was lost outright, and little or none saved in good condition. *Potatoes*—Potato crops, late and early, were good, and both averaged 7 tons per acre; disease appeared early in July, but temperature was low and there was less loss from blight than might have been expected; the loss from water-stain was considerable; no new varieties. *Turnips*—Early sowings did worst, and resowing was common; yield about 18 tons per acre. *Insects*—No injury. *Weeds*—To keep tillage land clean was next to impossible, and all sorts of weeds, both couch and annual, flourished to a much greater extent than usual. *Pastures* all through were most luxuriant, but not equal in quality to last year. *Live Stock* thrived well. Cattle and sheep free from disease.

WIGTOWNSHIRE. *Wheat*—Very little grown. *Barley*—Very little grown. *Oats*—Lea oats was a heavy crop, but badly smashed down by wind and rain; quality poor; 30 to 40 bushels per acre; oats, after green crop, much better quality; 40 bushels per acre; seeding, Potato oats, 6 bushels per acre by hand, 4½ bushels per acre when drilled; Victory oats 7 bushels per acre. *Harvest* was general about second week of September, and, owing to bad weather, lasted until about the end of October. *Hay*—Ryegrass a moderate crop, about 30 cwt. per acre. *Meadow Hay and Lea Hay* a good crop, but quality not good owing to bad weather and very difficult to save. *Potatoes*—Early potatoes, where not frosted, did well; 4 to 6 tons per acre; all earlies Epicure variety; late potatoes were below average, with some disease, and quality not so good as usual; about 5 to 6 tons per acre; no new varieties planted. *Turnips*—In Rhins district turnips generally braided well in most cases; from 12 to 23 tons per acre. In Machars district a large proportion required resowing, and resulted in a poor crop; fair crop where they braided all right; some finger-and-toe disease and dry-rot. Many farmers are sowing less turnips owing to difficulty in getting them singled. *Insects*—Damage from insects less than usual; very little cutting by grub last season. *Weeds*—The usual damage by these; turnip crop difficult to keep clear of weeds, owing to so much wet weather retarding the work. *Pastures*—Plenty of grass, but quality for feeding not so good as in a moderately dry year. *Live Stock*—

Throve well, but lambs were inclined to scour more than usual, due to wet weather. Cattle free from disease, but a large number of sheep farms suffered heavily from lamb dysentery, which is spreading rapidly. *Clip of Wool*—About an average clip and good quality.

GLASGOW DISTRICT.

AYRSHIRE. *Wheat*—52 bushels per acre; 60 lb. per bushel; straw 28 cwt. per acre; both grain and straw of poor quality; seed sown, $3\frac{1}{2}$ bushels per acre. *Barley*—40 bushels per acre; 53 lb. per bushel; straw 25 cwt. per acre; very little barley is now grown in the district; seed sown, 4 bushels per acre. *Oats*—46 bushels per acre; 39 lb. per bushel; straw 28 cwt. per acre; seed sown, $5\frac{1}{2}$ to 7 bushels per acre. *Harvest* began about end of August (ten days later than average), and continued into November. The weather was most unfavourable during September and October. Grain got over-ripe, and a considerable portion was thrashed in the fields by the strong winds prevailing. Both grain and straw were of poor quality. *Hay*—An average crop, but much of it was secured in poor condition; 32 to 34 cwt. per acre. *Meadow Hay*—A good crop, but the weather conditions made it impossible to get the crop in good order. *Potatoes*—7 to 8 tons per acre, of good quality, but considerable loss took place through blight, especially in second early lots. *Turnips*—18 to 20 tons per acre of varied quality; some affected with finger-and-toe, and nearly all crops grew strong tops, but failed to increase in bulb as might have been expected from the appearance and growth; crop braided well, and there was little if any resowing. *Insects*—Less damage than usual from insect pests. *Weeds*—The greatest difficulty was experienced in keeping down annual weeds; the expense and loss was greater than usual. *Pastures* were generally good. *Live Stock*—Stock did not thrive as they might have done had the weather been more favourable. Cattle and sheep free from disease. *Clip of Wool*—A good clip, both in weight and quality.

BUTE. *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop, but greatly spoiled by being badly laid. Many fields had to be cut by scythe, and did not thresh well. A fortnight of good weather at the end made a good finish up in this island; 5 to 6 bushels per acre sown. *Harvest* began about the usual time, 26th August, and was very protracted, not finishing up till 16th October. *Hay*—A fairly good crop, but very difficult to get; still a scarcity of clover; quantity about $1\frac{1}{2}$ tons per acre. *Meadow Hay*—Not much grown in this island; a fair crop, but it was spoiled by bad weather. *Potatoes*—Did well this year, considering there was so little sun. Early varieties about 5 tons per acre, late 8 tons per acre; Kerr's Pink did very well; a few Arran Conquest grown, and produced a good crop. *Turnips*—A very irregular crop; on dry ground there was a good crop, but on thin and wet fields the crop was a failure; good fields, 20 tons per acre; braided all right, very little resowing needed. *Insects*—No injury. *Weeds*—Did a lot of damage to the turnip crop; impossible to kill them owing to wet weather; more damage than usual. *Pastures*—Quite up to

the average in growth, but quality not so good. *Live Stock*—Stock did well, and came off pasture in good order. Cattle and sheep no special disease. *Clip of Wool*—An average clip.

ARRAN. *Wheat*—None grown. *Barley*—None grown. *Oats*—Very good crop all over the island, but harvesting operations were long and difficult owing to the terrible weather experienced during the months of September and October. Yield difficult to estimate as many farmers preferred to cut when green for fodder. *Harvest* began about a fortnight later than usual, and lasted fully three weeks longer. *Hay*—Hay crop fully better than last year, and some exceptionally good crops secured. *Meadow Hay*—About the same as last year. *Potatoes*—Potato crop, which is the principal one raised on the island, was as good as in former years. Farmers generally make a special effort to maintain their reputation as growers of seed potatoes. Arran Banner, the new potato raised at Lamlash, has given extraordinary results, 17½ cwt. being raised from one stone of seed. *Turnips*—Turnip crop not so good owing to the wet cold weather. Young plants never seemed to get away, while weeds seemed to flourish; the crop, however, recovered later on. *Insects*—Little if any damage by insects. *Pastures* were of average growth. *Live Stock* thrived all right. Cattle and sheep free from disease. *Clip of Wool*—About the usual, with prices fully better.

LANARKSHIRE (Upper Ward). *Wheat*—Very small quantities grown. *Barley*—Small quantities grown. *Oats*—20 to 55 bushels per acre; most of the crops badly laid and twisted, requiring shearers; the bad weather and late season accounted for fewer bushels per acre, with very indifferent straw; standing crops were better got, and yielded more grain and better straw. *Harvest* began at the beginning of September, a little later than the usual time; some corn badly laid was cut green in August. *Hay*—40 to 50 cwt. per acre; good quality, and fairly well got. *Meadow Hay*—Fair crop, but very badly got owing to bad weather. *Potatoes*—6 to 10 tons per acre; less than last year; some disease; early potatoes not lifted suffered badly from frost; Arran Consul grown with good results. *Turnips*—10 to 25 tons per acre; about half the usual crop owing to wet season, and not nearly the same feeding value; some resowing in certain districts owing to frost and cold weather. *Insects*—No injury. *Weeds* plentiful and difficult to keep down owing to wet season; damage greater than usual. *Pastures* very bare in spring owing to cold weather, but picked up in June and grazed well into the autumn. *Live Stock*—Too wet for all kinds of stock, especially lambs, which did moderately. Cattle and sheep free from disease. *Clip of Wool*—Average clip, with quality good.

LANARKSHIRE (Middle Ward). *Wheat*—30 to 40 bushels per acre; straw 30 to 40 cwt. per acre; seed sown, 4 bushels per acre; quality of grain and straw inferior. *Barley*—None grown. *Oats*—40 to 60 bushels per acre; straw 30 to 40 cwt. per acre; seed sown, 6 to 7 bushels per acre. *Harvest*—Later than usual, and much damage was caused through continuous wet weather; harvest was protracted, and much expense incurred through turning stooks, &c. *Hay*—Was a variable crop; 25 to 40 cwt. per acre. *Meadow Hay*—Fair crop, from 30 to 60 cwt. per acre. *Potatoes*—Very inferior crop, with good

deal of disease ; prices ranged from £3, 10s. to £6 per ton, and the weight varied from 4 to 10 tons per acre. *Turnips*—Very inferior crop and much disease ; yield 8 to 25 tons per acre. *Insects*—No damage by fly, but much damage by usual soft rot. *Weeds*—Owing to the wet condition of the land little could be done towards cleaning green crop on the heavier lands ; the crop and lands suffered on this account. *Pastures*—Were fair on the medium and better land, but on heavier lands were poor. *Live Stock*—Stock did not thrive on the pasture so well as in recent years. Cattle and sheep have been healthy and free from disease. *Clip of Wool*—Very few sheep in this ward.

LANARKSHIRE (Lower Ward). *Wheat*—30 to 40 bushels per acre ; quality fair, but inferior to last year ; straw rough ; seed sown, 3½ bushels per acre. *Barley*—None grown. *Oats*—18 to 20 cwt. per acre ; straw rough, 25 cwt. per acre ; seed sown, 5 to 6 bushels per acre, according to variety. *Harvest* began third week in August, a week later than last year. *Hay*—Medium ; 35 to 40 cwt. per acre of ryegrass and clover ; 50 cwt. per acre of Timothy ; quantities badly spoilt. *Meadow Hay*—None grown. *Potatoes*—7 to 8 tons per acre ; some disease in all varieties ; a limited area of Arran Consuls planted. *Turnips*—Poor crop generally ; 15 tons per acre ; owing to the continuous wet weather weeds were prolific ; crop braided well. *Insects*—No damage. *Weeds*—Difficult to keep down in every crop. *Pastures*—Good throughout season, especially where manured in the spring. *Live Stock*—Did well on pastures till August, after which grass seemed to lose its feeding value. Cattle and sheep free from disease. *Clip of Wool*—Average ; very few sheep kept ; lambs on aftermath generally lost money to the feeder.

RENFREWSHIRE. *Wheat*—About 38 bushels per acre ; about 25 cwt. of straw ; both grain and straw were average quantity, but quality slightly damaged by weather ; seed sown, about 3½ bushels per acre. *Barley*—Very little now grown in the county. *Oats*—About 50 bushels per acre ; straw about 23 cwt. per acre ; both grain and straw about average quantity, but quality much damaged by wet weather during harvest ; seed sown, about 6 bushels per acre. *Harvest* commenced about the usual time, but, on account of exceptionally bad weather, it was a prolonged and difficult one. *Hay*—About 40 cwt. per acre, with quality below the average on account of unseasonable weather at hay time. *Meadow Hay*—Small quantity now grown, and this suffered, with other crops, from unfavourable weather. *Potatoes*—The yield, of about 6 tons per acre, was below the average on account of prolonged rains and lack of sunshine, with some disease in second early varieties ; a few new varieties planted, with satisfactory results. *Turnips*—The yield was much below the average, as the result of land being soured by rain ; about 15 tons per acre. On the whole, crop braided satisfactorily, and in few cases was more than one sowing required. *Insects*—Very little injury. *Weeds*—Owing to the nature of the season and the consequent difficulty of working land, there was an exceptional growth of annual weeds, and crops suffered somewhat in consequence. *Pastures*—About average growth, but quality not up to usual standard. *Live Stock*—Did not thrive so well as in normal seasons. Cattle and sheep free from disease, although foot-rot more

prevalent in sheep. *Clip of Wool*—Quality good, and quantity about the usual, although in a few cases below the average.

ARGYLLSHIRE (Lochgilthead). *Wheat*—None grown. *Barley*—None grown. *Oats*—Lea oats a very good crop; not just so bulky as last year; sown down land inclined to be light; lea straw averaged about 1 ton and 6 bolls grain; red land, 16 cwt. straw and 5½ to 6 bolls grain. *Harvest* ten days later than last year, and more prolonged. *Hay*—Ryegrass not so heavy as last year; about 25 cwt. per acre; well got. *Meadow Hay*—Also not so heavy; about 35 cwt., and in many cases not well got. *Potatoes*—Potato crop disappointing; about 5 tons average; not much disease; no new varieties planted. A lot of trouble at lifting, owing to continuous wet weather. *Turnips*—Turnip crop poor, and a good deal of disease; weight about 16 tons average, and in many cases less; crop braided all right, but owing to wet weather did not bulb. *Insects*—Crops not injured by insects to any extent. *Weeds* very prevalent, especially redshank. *Pastures* of quite average growth, but soft, owing to wet weather. *Live Stock*—Stock thrive well, but did not put on so much flesh as some years. Cattle and sheep both free from disease; a little fluke among sheep. *Clip of Wool*—Quality of wool very good, just about the average for weight.

ARGYLLSHIRE (Islands of Islay, Jura, and Colonsay). *Wheat*—None. *Barley*—None. *Oats*—Fully 36 bushels per acre; average weight of grain; stacks threshed well and grain firm and bright. *Harvest* began beginning of September, the usual time. *Hay*—Crops good; about 30 cwt. per acre. *Meadow Hay*—Same as last year. *Potatoes*—Good average crop; about 5 tons per acre; no disease; no new varieties planted. *Turnips*—About 14 tons per acre; quality same as last year; one sowing only. *Insects*—No injury. *Weeds*—No damage. *Pastures*—Average growth. *Live Stock*—Cattle and sheep in good condition. Cattle and sheep free from disease. *Clip of Wool*—Fully up to the average.

STIRLING DISTRICT.

DUMBARTONSHIRE (Upper). *Wheat*—None grown. *Barley*—None grown. *Oats*—A fair bulk of straw, but grain was damaged by the crop being laid before cutting, and then by wet weather; about 24 bushels per acre. *Harvest* began about the usual time. *Hay* was a lighter crop than last year; about 1½ tons per acre; some of it was badly spoiled by rain. *Meadow Hay* was a good crop, but badly got; some never cut. *Potatoes* were a poor crop, small in size; about 4 tons per acre; disease in earlies started at the end of August. *Turnips* were a smaller crop than last year; about 18 tons per acre; crop braided well; no resowing. *Insects*—No damage by insects. *Weeds* were very troublesome owing to the wet weather; yarr in oats after green crop, and redshank in potatoes and turnips. *Pastures* of average growth, but quality inferior. *Live Stock* did not thrive so well as usual. Cattle and sheep free from disease. *Clip of Wool*—Good quality, and fully an average.

DUMBARTONSHIRE (Lower). *Wheat*—About 34 bushels per acre ; quality of grain not so good. *Barley*—Little or none grown. *Oats*—About 36 bushels per acre ; quality of grain and straw not so good as last year, owing to wet weather. *Harvest* began about a fortnight later than usual, first week of September. *Hay*—32 cwt. per acre ; about the same weight as last year ; a lot of it was badly damaged by wet weather. *Meadow Hay*—A good crop, but a lot of it spoiled by the weather. *Potatoes*—Crop rather lighter than last year ; 4 to 8 tons per acre ; quality not so good as last season ; rather more disease. *Turnips*—About 16 tons per acre ; less weight than last year ; a good braird ; little resowing. *Insects*—Little injury. *Weeds*—No more injury than usual. *Pastures*—Average growth, but quality not up to average. *Live Stock* thrived fairly well. Cattle and sheep free from disease. *Clip of Wool*—An average clip.

STIRLINGSHIRE (Western District). *Wheat*—None grown. *Barley*—None grown. *Oats*—32 to 38 bushels per acre ; straw 18 to 25 cwt. ; grain and straw damaged by unfavourable weather. *Harvest*—About two weeks later than last year, beginning about 24th August, and finishing around 15th October. *Hay*—30 to 35 cwt. per acre. Clover much the same as last year ; not too well got. *Meadow Hay*—Nearly equal to last year ; badly got. *Potatoes*—Average yield, 5 to 6 tons per acre ; suffered from want of sunshine ; some varieties affected with disease at lifting, but Arran Consul entirely free from it, and, although not such a heavy crop as last year, yielded fully 12 tons per acre. *Turnips*—Yellow turnips, despite being rather small, yielded in the region of 18 to 20 tons per acre, representing a moderately fair crop for the district ; swedes, a failure on most farms ; brairded slow in many places ; two or three sowings, due to excessive moisture and fly. *Insects*—Injury from fly greater than last year. *Weeds*—Potatoes and turnips suffered much more than usual from redshank and other weeds, which it was hardly possible to remove owing to the sodden condition of the ground. *Pastures*—Fairly good, and of average growth. *Live Stock* thrived quite well considering abnormal weather. Cattle and sheep free from disease. *Clip of Wool*—Average clip and quality.

STIRLINGSHIRE (Eastern District). *Wheat*—About 50 bushels per acre ; fair quality ; straw about 25 cwt. per acre. *Barley*—About 32 bushels per acre ; quality fair, and straw about 20 cwt. per acre. *Oats*—About 36 bushels per acre ; fair quality, and straw about 20 cwt. per acre. *Harvest*—About two weeks later than usual, and very difficult to work, owing to so much rain. *Hay*—Fair good crop, but owing to weather was only secured in fair order. *Meadow Hay*—Very little good meadow hay secured. *Potatoes*—Yield below average, owing to wet season. *Turnips*—Deficient in quantity and quality ; about 15 tons per acre. *Insects*—Nothing unusual. *Weeds*—About the usual. *Pastures* fairly good, considering the wet season. *Live Stock* thrived fairly well. Cattle and sheep free from disease. *Clip of Wool*—Good average.

CLACKMANNANSHIRE. *Wheat*—A fairly good crop, although on heavy land it was thin in places ; the straw was long, but in some districts it was badly laid ; the grain thrashed well, but was a little soft in quality ; 32 to 34 bushels per acre ; 3 to 4 bushels of seed sown.

Barley—Crop was poor in quality, and much discoloured, and did not ripen well; yield about 30 bushels per acre; 3 to 4 bushels seed sown. *Oats*—The straw was irregular; in some places plenty of straw, soft in quality, and lodged a good deal; difficult to harvest. The crop was fairly thick on the ground; during harvest the weather was wet and broken; but on the whole it was got in in moderately good condition; average yield 30 to 33 bushels per acre; average weight 40 lb. per bushel. *Harvest* began about the usual time. *Hay* was an average crop; 30 to 33 cwt. per acre; the quality was fair, and in most cases was fairly well got; some of it was damaged in the tramp rick, and did not weigh according to bulk. Timothy hay was quite a good crop, 40 to 45 cwt. per acre, and got moderately well. *Meadow Hay*—A good crop, but much damaged by the excessive rainstorms. *Potatoes* were a much smaller crop than last year, especially Golden Wonders, which were a small crop and very small in size; Kerr's Pink were a full average crop; very few early potatoes grown in the district; some Arran Consuls were a large crop; average crop 4 to 5 tons per acre. *Turnips*—The worst crop of the season; it braided well, and after singling it fell away owing to the excessive rainfall and want of sunshine; crop 12 to 15 tons per acre; very little finger-and-toe, but some cases of dry-rot and other fungus disease; very little second sowing. *Insects*—Little or no damage by insects. *Weeds*—A very bad year for weeds; thistles among the corn and other crops, and soft weeds among the turnips; charlock and couch-grass were also bad, and owing to the rain could not be killed among the turnips. *Pastures* deficient in feeding quality, although fairly bulky in quantity. *Live Stock* did not thrive nearly so well as last year. Cattle and sheep were free from disease. *Clip of Wool* was a fair average.

PERTHSHIRE (Western District). *Wheat*—36 bushels per acre; crop not too well harvested; area sown would be about, or slightly over, average. *Barley*—Area sown about a full average; crop not too well secured; yield about 30 bushels per acre; straw deficient in bulk. *Oats*—Generally good crops, and a fair bulk of straw; yield of grain 34 to 36 bushels per acre. *Harvest*—In general, most of the crops were damaged by wet weather; the harvest was about a fortnight later than usual. *Hay*—A full crop, especially so on carse land, where several farms showed a yield of 3½ tons per acre of Timothy. *Potatoes* were a good average crop in spite of the adverse weather conditions. *Turnips*—An average crop, though the weather was rather against the growth. *Insects*—No damage. *Weeds* were very plentiful in green crops. *Pastures* suffered from too much rain and too little sun. Cattle did not thrive too well on the pastures, and left little or no profit from summer's grazing. *Clip of Wool*—Quite an average clip.

PERTH DISTRICT.

FIFESHIRE (Middle and Eastern). *Wheat*—A good crop of straw; yield of grain rather deficient; 32 to 40 bushels per acre; seed, 3 to 4 bushels per acre. *Barley*—Yield of grain very poor and inferior in weight and quality; from 24 to 36 bushels per acre; many fields early lodged; straw of poor quality, and badly damaged.

Oats—A very bulky crop on good well-farmed land ; after wild white clover many fields were early lodged, and most difficult and expensive to harvest, and in some instances totally useless and remained uncut ; grain poor quality ; from 32 to 48 bushels per acre ; straw very inferior in quality. *Harvest* commenced about first week of September, about one week later than last year, and generally completed about five weeks later. *Hay*—A fair average crop, about 2 to 2½ tons per acre ; quality rather soft and deficient in feeding ; generally well harvested. *Meadow Hay*—None grown. *Potatoes*—Yield under an average ; from 4 to 5 tons dressed potatoes ; a good deal of diseased and soft potatoes in certain varieties ; considerably damaged by frost where late harvested. *Turnips*—Swedes deficient in size and quality ; average from 12 to 18 tons per acre ; yellows a very full crop, and good quality ; on some farms a little finger-and-toe ; crop braided well, with little or no resowing. *Insects*—Very little damage by insects. *Weeds*—Owing to the wet season, heavy land was difficult to cultivate and clean ; damage by weeds greater than usual. *Pastures* very abundant, but quality very deficient. *Live Stock*—Stock generally thrived fairly well ; fat lambs and fattening cattle were inferior in quality, except where receiving supplementary rations of concentrated feeding-stuffs. Cattle and sheep generally free from disease ; a few cases of anthrax, and grass sickness in horses. *Clip of Wool*—A full average, both as regards quantity and quality. *Sugar Beet* was grown on a more extensive scale ; yield most disappointing, both as regards quantity of washed beet and sugar content ; average from 5 to 6 tons per acre, about 2½ to 3 tons under last year, with average sugar content of 16·7 per cent, 1·5 per cent less than 1926. Highest yield in district was stated at about 9 tons per acre, with certain instances of crops from 2 to 3 tons per acre, and in a few cases total failures ; crop generally braided well, except in a few instances attributed to bad seed, with strong growth of shaws ; growers were greatly disappointed with results when harvested ; cultivation and harvesting very difficult owing to unfavourable season.

FIFESHIRE (Western District). *Wheat*—A crop of big bulk ; like all grain crops was badly laid and damaged by continuous wet weather ; yield 24 to 32 bushels per acre of poor quality ; straw 30 cwt. per acre, soft and badly broken ; usual seeding, 4 bushels per acre. *Barley*—Was generally of bad colour, and little of it was fit for malting ; yield 24 to 28 bushels per acre ; straw soft and of little value ; much of this crop was badly laid, and in a few cases the worst of it was never harvested ; seeding, 4 bushels per acre. *Oats*, which looked a big crop, gave a low return ; much of the grain was lost in handling at harvest ; the crop likewise was badly laid and twisted, and required expensive labour ; yield 40 to 48 bushels per acre, the natural weight being much below the average ; straw about 30 cwt. per acre of poor feeding value ; seeding, 6 bushels per acre. *Harvest* of 1927 will be remembered as one of the worst on record ; with the continual wet season the crops never ripened, and the general run of harvest would be two to three weeks late in starting ; the crops required much hand labour to secure, and with many interruptions of wet spells were stacked in bad condition ; wet and heated stacks. *Hay*—It is difficult to estimate the weight of this crop ; the crop appeared before cutting to be

heavy, but likewise with continual rain it was damaged in harvesting, bleached with rain, and weighed light; much of it of poor feeding quality. *Meadow Hay*—Above the average for bulk; secured in bad condition. *Potatoes*—Owing to the lack of sunshine potatoes gave a low yield, and the wet season tended to cause disease; this was noticeable in July and early August; no new varieties have been planted. *Turnips*—Crop generally was a small one, and farmers will have difficulty in carrying their stock through to spring; land soured by rain caused early attacks of finger-and-toe disease; owing to lack of sunshine the plants never appeared to bulb; at the time of brairding the weather was dry, and the braird irregular; no second sowing reported. *Insects*—Crops generally free from insect pests. *Weeds*—Wet weather encouraged the growth of weeds; horse and hand labour only transplanted the annual weeds. *Pastures* were abundant; the grass appeared to have little feeding quality. *Live Stock*—Stock did not thrive too well, due to wet and cold. Cattle and sheep generally free from disease. *Clip of Wool*—An average of fair quality, and sold at a slightly increased price. *Sugar Beet* was again grown on a much larger acreage; the returns have been most disappointing; average crops, $5\frac{1}{2}$ to 6 tons per acre; low sugar content due to lack of sunshine; the crop was expensive to work, requiring extra hand-hoeing, and the harvesting was delayed with adverse weather; the roots were sent to the factory with a high percentage of soil.

PERTSHIRE (Eastern District). *Wheat*—Good crop, but considerably damaged by the wet cold weather; yield about 34 bushels per acre; seed, 3 to 4 bushels per acre; *Barley*—Under average, and middling quality; yield about 34 bushels per acre; seed, 3 to 4 bushels per acre. *Oats*—Bulky crop; badly laid and twisted, and difficult to harvest; yield about 40 bushels per acre; seed, 4 to 6 bushels per acre. *Harvest* began about ten days later than last year, and was very protracted, lasting fully six weeks; it was tedious and expensive, and a large proportion of the grain crop was stacked in very bad order. *Hay*—A good crop, but much of it was secured in very indifferent condition; yield about 35 cwt. per acre. *Meadow Hay*—Very little grown. *Potatoes*—Under average; about 5 tons per acre; some disease in many of the earlier varieties; King Edwards very poor crop; about 2 to 4 tons per acre; Majestic and Arran Consul were good sound crops, and lifted 8 to 10 tons per acre. *Turnips*—A disappointing crop; many fields affected with finger-and-toe; yield about 15 tons per acre. *Insects*—Not more than usual. *Weeds* were very bad, especially in root crops, and difficult to get rid of on account of so much wet. *Pastures*—Very good. *Live Stock* thrived well, but the continuous wet cold weather was much against them. Cattle and sheep free from disease. *Clip of Wool*—Under average; good quality.

PERTSHIRE (Central District). *Wheat*—A fair break was sown, and the return was an average one; the wheat was harvested, on the whole, in fair condition; about 40 bushels per acre. *Barley*—The crop was fair, but the acreage sown was again under the usual; straw was plentiful; yield would be about 34 bushels per acre, weighing from 50 to 52 lb. to the bushel. *Oats*—Extensively grown; about 34 bushels per acre. *Harvest*—The quality of the

grain cut in August and September was only fair; the harvest weather was very unfavourable, and the crop was secured in only fair condition. *Hay*—Was of good quality, and was secured in excellent order, and the yield was good. *Meadow Hay*—The yield was satisfactory. *Potatoes*—Progressed very satisfactorily throughout the season, and were a fair crop; the average would be from 6 to 9 tons per acre; the crop was free from disease. *Turnips*—The yield, on the whole, was good; swedes did very well; weight from 10 to 17 tons per acre. *Insects*—Damage was done on some farms by wireworm and grub. *Weeds*—Were very plentiful and difficult to keep down; couchweed is still on the increase. *Pastures*—Were good. *Live Stock*—Generally did well throughout the year. Cattle and sheep were free from disease. *Clip of Wool*—Was of good quality and a very full average.

PERTSHIRE (Highland District). *Wheat*—None grown in district. *Barley*—None grown in district, except small patches for stock; very poor samples. *Oats*—Heavy crop of straw; yield of grain much below the average and very light; natural weight about 38 lb. per bushel. *Harvest*—Fully a month later than the average of past years; about the last week in September, even then very green in most places. Owing to the warm moisture of early July there was great growth of straw, followed by cold sunless weather in August, but the grain never filled nor ripened, and was almost impossible to harvest or secure. *Hay*—Hay crop much below the average, and very badly secured; 28 cwt. per acre; expensive to secure, and quality poor owing to want of sun. *Meadow Hay*—Very late, but average crop, and almost impossible to secure owing to the constant rain; quality very poor. *Potatoes*—Less by one-half per acre; not exceeding 3 tons, and the larger portion of the crop very small and of poor quality for table use; certain varieties had disease, which began to show early in August; not many new varieties planted; season's crop very disappointing. *Turnips*—Most crops under the average; size small and quality poor as compared with former years; 12 tons per acre; very stiff in braiding owing to the cold wet weather, and some second sowing required. *Insects*—Very little damage to crops from insects. *Weeds*—Greater damage to crops, as the land could not be cultivated to the required tilth owing to the wet. *Pastures*—Very late in growth, and quality poor, owing to the cold, late, sunless season; much inferior to last year. *Live Stock*—Stock did fairly well, but cows deficient in an average yield of milk, and store stock took on condition very slowly. Cattle and sheep free from disease. *Clip of Wool*—Fully over the average in bulk and the quality exceptionally good, but very difficult to get clipping done for the want of dry weather.

FORFARSHIRE (Western District). *Wheat*—About 36 bushels per acre; quality of straw below average; seed, 3 to 4 bushels per acre. *Barley*—From 20 to 50 bushels per acre, with an average of about 36 bushels per acre; except in exceptional instances the straw was of secondary quality; seed, 3 to 4 bushels per acre. *Oats*—The quality of both oats and straw very secondary, and the quantity of grain between 20 bushels per acre of shag and 70 bushels per acre of oats of only fair quality; about an average of 46 bushels per acre; seed, 4 to 7 bushels per acre. *Harvest* was somewhat

late, and was protracted ; grain was badly laid ; the scythe and hook were very much in evidence ; a few fields left uncut, and were useless. *Hay*—Quantity about 2 tons per acre ; quality very moderate ; very little real good stuff. *Meadow Hay*—Much the same as last year. *Potatoes*—Yield under 6 tons ; some fields did not yield 2 tons ; considerable disease in some of the earlies ; of the newer varieties in the district Claymore crops did well, and the quality was excellent. *Turnips*—Crop considerably under the average ; say, 16 to 17 tons. *Insects*—No injury of consequence by insects. *Weeds*—Skellies were much in evidence where cover was wanting in both potato and turnip fields. *Pastures*—Plentiful. *Live Stock*—Stock thrive well considering the wet season. Cattle and sheep free from disease ; still cases of grass sickness in horses. *Clip of Wool*—Quantity and quality about an average.

ABERDEEN DISTRICT.

FORFARSHIRE (Eastern District). *Wheat*—32 bushels per acre ; 30 cwt. straw per acre ; poor quality of both grain and straw ; seed sown, $3\frac{1}{2}$ to 4 bushels per acre. *Barley*—A fair crop, but greatly spoiled, and threshed badly ; grain of very poor quality ; 34 bushels per acre ; 20 cwt. straw per acre ; seed sown, 3 to $3\frac{1}{2}$ bushels per acre. *Oats*—A big crop, but damaged so badly as to make some fields worthless ; grain very light, and straw very bad fodder ; 48 bushels per acre ; 25 cwt. straw per acre ; seed sown, 6 bushels per acre. *Harvest* commenced about the end of August, just about the usual time, but did not finish until about the third week in October. *Hay*— $2\frac{1}{2}$ tons per acre ; very medium quality, and badly secured. *Meadow Hay*—More productive. *Potatoes*—Generally a very light crop, the average not being over 5 tons ; a little disease, not so much as expected ; no new varieties. *Turnips*—Crop inferior both in quality and quantity ; not exceeding 18 tons per acre ; brairded all right, but got far too much wet at time of singling. *Insects*—No injury. *Weeds*—No damage. *Pastures*—Plentiful, but of poor quality. *Live Stock* did not thrive so well as usual, the pastures being scarcely dry all summer. Cattle and sheep almost free from disease, the number of anthrax cases being much under last year. *Clip of Wool*—A moderate clip of fair quality.

KINCARDINESHIRE. *Wheat*—32 to 34 bushels per acre ; grain fair ; straw ample and of good quality where harvested early. *Barley*—32 bushels per acre ; grain of indifferent quality ; colour bad ; average yield of straw ; 4 bushels per acre sown. *Oats*—44 bushels per acre in the case of standing crops, and from 16 to 24 bushels per acre in the case of crops which had been lodged. Part of the oats in fair order, but not nearly of the same quality as last year. Straw plentiful and of fair quality where crop was standing, but very indifferent in the lodged crops. *Harvest*—One of the worst on record, and a considerable quantity of the crop was not secured until late in November and in some cases December. A very late one ; cutting did not begin until the middle of September, and was not finished in late districts until December. *Hay*—30 cwt. per acre ; quality only fair, and secured in very indifferent

order; clover deficient. *Meadow Hay*—None grown. *Potatoes*—About 3 tons per acre; King Edward crop practically a failure; some crops of other varieties good, but generally the crop was very indifferent; few new varieties planted. *Turnips*—Yellows, 12 tons per acre; swedes, 15 tons per acre; considerable areas of early yellow and swedish turnips suffered through the turnips shooting, and the crop did not bulb well; resowing not so prevalent as last year; braird generally good. *Pastures*—Plentiful during the summer owing to the wet weather. *Live Stock*—Cattle and sheep thrive well and proved profitable on the grass, but otherwise for winter feeding. Considerable number of cases of grass disease in the case of horses. Cattle and sheep free from disease. *Clip of Wool*—Clip about the same as last year, and quality rather better.

ABERDEENSHIRE (Buchan District). *Wheat*—None grown. *Barley*—30 bushels per acre; quality of grain and straw fairly good where crop was secured in good order, but the larger portion of the crop was seriously and permanently damaged, both in grain and straw, by the inclement weather, and the yield cannot be stated; seed sown, 4 bushels per acre. *Oats*—35 bushels per acre; seed sown, 6 to 6½ bushels per acre; similar remarks apply to oats as to barley; the bulk of the crop was a dismal failure. *Harvest* began about the usual time, but it continued right up to the month of December, and in some cases in fields, or in parts of fields, oats were left uncut. *Hay*—Average crop; about 3½ to 4 tons per acre, and secured, on the whole, in fairly good condition, and of good quality. *Meadow Hay*—None grown. *Potatoes*—Potato crop on many farms had not been lifted at end of year, first on account of wet, and then on account of frost and snow; yield, if anything, a little below average; quality in most cases not good; yield about 9 tons per acre; disease was common among early varieties; no new varieties sown. *Turnips*—Crop about 14 tons per acre, and on the whole a good one, but not so good as last year in yield or quality; brairded well, and few second sowings were required. *Insects*—No injury by insects, which must have been drowned by the continual rain. *Weeds*—The land was too wet even for weeds to grow. *Pastures* were below the average in quality, and stock did not fatten on them as usual; all substance seemed to be washed out of the grass. *Live Stock*—Stock thrive considerably below the average. Cattle and sheep free from disease. *Clip of Wool*—Little wool in the district.

ABERDEENSHIRE (Central District). *Wheat*—No wheat grown. *Barley*—32 bushels per acre; 12 bushels less than last year; quality of grain and straw inferior to that of last year; natural bushel weight not over an average of 52 lb.; seed sown, 3 to 3½ bushels per acre where drill sowing machine used; 4 bushels per acre where broadcast sowing machine used, or sown by hand. *Oats*—38 bushels per acre; 14 bushels less than last year; straw 22 to 23 cwt. per acre; much about the same as last year; quality of grain and straw inferior to that of last year; seed sown, Potato and all thin-husked varieties, from 5 to 5½ bushels per acre where drill sowing machine used; 6 to 7 bushels per acre where broadcast sowing machine used, or sown by hand; all thick-husked varieties from 2 to 2½ bushels per acre extra. *Harvest*—Barley and oat harvest commenced generally about 15th September; completion of both harvests

very irregular, but finished with a few exceptions by the end of November; from three to four weeks later than last year, weather conditions being more unfavourable than average. *Hay*—31 cwt. per acre; about same as last year; quality inferior to that of last year, and not so well mixed with clover, with a few exceptions where harvesting was completed early. *Meadow Hay*—24 cwt. per acre; 1 cwt. per acre less than last year; quality inferior to that of last year. *Potatoes*—About 5½ tons per acre; from 2 to 2½ tons per acre less than last year; disease to a greater or less extent invariably reported; from August onwards quality generally inferior to that of last year, with a much larger proportion of smalls—Majestic, British Queen, Langworthy, Kerr's Pink, Arran Chief, Golden Wonder being favourites for general crops; plots and garden varieties, a few Duke of York and Ashleaf varieties are still favoured where permission given to grow; no report of new varieties planted. *Turnips*—About 14 tons per acre, much the same as last year; brairding and progress of growth were rather irregular; second sowing was, however, only necessary in isolated cases where the seed-bed or other conditions were not good; disease was reported, but only to a small extent, principally finger-and-toe. *Insects*—No report of injury by insects to either cereal or turnip crops. *Weeds*—Surface weeds on account of the wet season were of more than average growth, but not more than would be expected considering the nature of the season. *Pastures* during the season were of average growth, but considered to be of inferior feeding quality to that of last year. *Live Stock*—Did not progress or thrive so well as last year; pastures were of poor quality, fields cold and damp, weather conditions being clearly reflected in the slow progress made. Cattle and sheep were free from disease. *Clip of Wool*—Clip and quality of wool much about the same as last year.

ABERDEENSHIRE (Strathbogie District). *Wheat*—None grown. *Barley*—Last year there was a smaller area under barley than usual, and it is well that such was the case, as the season was most unsuitable for its growth. The weather up till the opening of July was excessively cold and wet, with little growth; then came warm growthy weather, which transformed the countryside from bleakness to every appearance of a good crop. The better outlook unfortunately only lasted for two months; then came heavy downpours of rain, which flattened all crops and dispelled the agricultural prospect. There was little barley in the district fit for distilling purposes, as the bushel weight was under trade requirements. *Oats*—Like barley, oats also suffered from the inclemency of the season. With the rapid growth in July and August the straw was soft, and was easily laid by the rains; a large proportion of the crop was laid and twisted in such a way that binders were useless for reaping purposes. The scythe was greatly in evidence, but the work was slow and harvesting was unusually protracted, and there were not a few instances of leading at term time; the yield of grain was poor, even where it was fairly well secured; weight ranged from 39 to 42 lb. per bushel, but there was much below the former weight, which was quite unsaleable. *Harvest*—The season being late and cold, harvest began about a fortnight later than the usual time. *Hay* was a somewhat disappointing crop, both as regards bulk and quality, much of it being badly

spoiled in curing, so that it was rendered of little value for feeding purposes; pastures being scarce during the early portion of the season, the area under hay had to be curtailed a good deal. *Potatoes* were a poor crop, being small in the run; would bulk at least a third less than an average crop; in many instances they were not lifted till the Martinmas term, the weather being so unsuitable for the work; there was no disease among the tubers. *Turnips*—Like other crops, turnips have been poor, and at best not much over half a crop, and they will be scarce long before the opening of the grazing season; the crop braided all right, but, owing to the weather, difficulty was experienced in getting them laid down. *Insects*—No injury by insects to any of the crops. *Weeds*—The crop did not suffer any special injury from weeds. *Pastures*—The early part of the season being very growthless, pastures were remarkably scarce, but with the heat of July and August they became quite abundant, and during these two months stock did well, but when the weather turned so bad in September animals did not put on flesh in a satisfactory manner. Cattle and sheep free from disease. *Clip of Wool*—Quality and quantity of clip up to average.

BANFFSHIRE (Lower District). *Wheat*—None grown. *Barley*—Average yield 32 to 35 bushels per acre, weighing 52 to 54 lb. per bushel; quality of grain fair; straw also of fair quality; seed sown, 4 to 4½ bushels per acre. *Oats*—Average yield 40 to 50 bushels per acre, weighing 38 to 42 lb. per bushel; quality of grain very fair; straw of fair quality; seed sown, about 4 bushels per acre. *Harvest*—Began almost about the usual time, but continued from eight to nine weeks, owing to wet weather. *Hay*—Similar to last year; 38 to 40 cwt. per acre. *Meadow Hay*—None grown. *Potatoes*—Almost an average crop; first earlies about 5 tons per acre; later varieties about 8 tons; no disease; Arran Consuls were the only new variety. *Turnips*—Crop about average; about 14 tons per acre; crop braided well; no second sowing. *Insects*—No damage by insects. *Weeds*—No injury. *Pastures* were good during the season. *Live Stock*—Stock on the whole did well. Cattle and sheep free from disease. *Clip of Wool*—An average clip.

BANFFSHIRE (Upper District). *Wheat*—None grown. *Barley*—None grown now in the district, distillers all buying foreign barley. *Oats*—Seed time was protracted; a few early sowings in March, then a snowstorm kept sowing back, and much of the crop was put in late and in bad order; very cold and wet weather followed on until the eclipse on 29th June; July redeemed matters a great deal; unfortunately the weather again broke, and growth lagged all throughout August and September. *Harvest*—Began late in September, three to four weeks later than usual, but most of the crops were neither filled nor ripe; tempest after tempest of wind and rain broke down the crops, then a severe snowstorm covered everything for weeks; leading took place by snatches; stacks were put up anywhere; much of the crop not worth thrashing; seed for the next crop must be looked for elsewhere; great stretches of oats uncut at the middle of January 1928. *Hay*—Crops very thin and deficient in clover; haymaking a laborious and tedious job with the wet season; much spoiled before stacking; to all appearance fodder will be scarce before the grass season. *Meadow Hay*—

Meadows are grazed in August and September when the arable fields get bare; the wet rather favoured the rough grasses. *Potatoes*—Were late planted, hardened up at first in the drills, and were eventually spoiled by the long continued cold rains; no disease to complain of; Kerr's Pink now a favourite. *Turnips*—Were also greatly affected by the weather all through; puddled in late, the hot July brought them well to the hoe, and that was the only time they thrived; they were in no case more than half a crop, and wet sour portions of fields were next to blank. *Insects*—Did not survive the cold and wet. *Weeds*—Were plentiful from the start, as the land was too wet for implements to properly prepare the ground; then skimming and drill harrowing had little effect. *Pastures*—Failed early. *Live Stock*—Stock suffered much on exposed fields from the great excess of cold rains, and graziers had small profits for the summerings. Cattle were much affected by ringworm during the last three months of year. *Clip of Wool*—Clipping was later, with an average clip.

INVERNESS DISTRICT.

MORAYSHIRE. *Wheat*—Much the same as last year; about 25 cwt. grain per acre; 40 cwt. straw per acre. *Barley*—About 17 cwt. per acre, or 3 cwt. per acre less than last year; straw about 20 cwt. per acre, or 5 cwt. per acre less than last year; weight of grain 53 lb. per bushel, or 3 lb. below standard; colour indifferent; seed sown, $1\frac{1}{2}$ to 2 cwt. per acre. *Oats*—About 12 cwt. per acre, or 3 cwt. per acre less than last year; quality poor; weight 40 lb. per bushel, or 2 lb. below standard; quality of straw indifferent; weight about 28 cwt. per acre, or 7 cwt. per acre less than last year; seed sown, 2 to 3 cwt. per acre according to variety. *Harvest*—Began about the usual time, end of August, and finished very late, the harvest weather being about the worst within living memory; some of the earliest cut grain was more than three months in the stook, and then got in in bad order; the later districts finished in much less time; the smaller crops often gave the higher return. *Hay*—About 26 cwt. per acre, or 2 cwt. less than last year; clover not so good this year; weather broke before all was secured. *Meadow Hay*—Little grown, about the same as last year. *Potatoes*—About 3 tons per acre, or same as last year; disease apparent. *Turnips*—About 22 tons per acre, 3 tons per acre less than last year; crop braided well, and progressed well through the season; the heavy winter frosts did a lot of damage. *Insects*—No noticeable damage. *Weeds*—No noticeable damage. *Pastures*—Quantity and quality fully better than last year. *Live Stock*—Cattle and sheep thrived well, and were free from disease; grass sickness claimed some victims amongst the horses. *Clip of Wool*—Rather above the average.

NAIRNSHIRE. *Wheat*—Not grown. *Barley*—4 bushels per acre sown; a poor crop as regards grain yield—about 3 qrs. per acre; very light in weight, largely owing to the unfavourable harvest weather experienced; the straw crop was a very bulky one, but suffered much from same cause. *Oats*—6 bushels per acre sown of the newer varieties; as in the case of barley, a smaller yield than

usual—about 5 qrs. per acre ; straw exceptionally bulky. *Harvest*—About ten days later than usual. *Hay*—A good crop. *Meadow Hay*—None cut. *Potatoes*—A smaller yield than last year ; little disease, if any. *Turnips*—A poor crop on most farms ; finger-and-toe more or less prevalent ; the crop braided well, and only one sowing was required. *Insects*—No injury. *Weeds*—No injury. *Pastures*—Were over the average, both as to growth and quality. *Live Stock*—Throve well. Cattle and sheep free from disease ; some cases of grass sickness in horses have again to be reported. *Clip of Wool*—An average clip.

INVERNESS-SHIRE (Inverness District). *Wheat*—Area under wheat small ; about 40 bushels per acre, 60 lb. to the bushel ; straw, say, 30 cwt. per acre ; seeding, 4 bushels per acre ; the quality of grain and straw, owing to very wet season and bad harvest, considerably below an average. *Barley*—Quality and condition poor ; crop very badly lodged, and suffered from bad harvest weather ; about 32 bushels per acre, 53 lb. to the bushel ; straw about 25 cwt. per acre ; seeding, 4 bushels per acre. *Oats*—Very much deteriorated before harvesting, being beaten down by heavy rainstorms and considerably spoiled when being harvested ; grain and straw were under average quality ; 32 to 36 bushels per acre, about 40 lb. to the bushel ; straw about 28 cwt. per acre ; seeding, 4 to 8 bushels per acre, according to variety of oats sown. *Harvest*—Began about the usual time, end of August, and dragged on till the end of November ; worst harvest for many years. *Hay*—Much the same as last year in quantity, but quality not so good ; about 25 to 30 cwt. per acre. *Meadow Hay*—Much the same, but not so well got. *Potatoes*—Very poor yield in most cases, about 4 tons per acre ; a good deal of disease, which began about the end of August ; a few of the newer varieties planted, which gave better results than some of the old. *Turnips*—Rather under an average season ; about 17 tons per acre ; crop came away well, and only one sowing. *Insects*—No particular damage. *Weeds*—Much as usual, except that, owing to the wet season, drill hoeing was done under difficulties. *Pastures*—Of quite average growth, but quality under last year. *Live Stock*—About up to an average season. Cattle and sheep free from disease. *Clip of Wool*—Quite good.

INVERNESS-SHIRE (Skye). *Wheat*—None grown. *Barley*—None grown. *Oats*—A fair crop and ripened well, but grain scarcely so heavy as last year ; it was very difficult to get the crop dried, and much of it was stacked in bad condition. *Harvest*—Commenced about 10th September ; not so early as last year. *Hay*—Ryegrass rather light in most parts, but secured in good condition ; clovers do not grow well on the island except in a few favoured spots. *Meadow Hay*—Was a good crop, and the bulk of it was secured in very good condition. *Potatoes*—Were a fair crop, except in exposed situations where the crop was damaged by strong winds in August ; those not lifted prior to November suffered badly from disease. *Turnips*—Are grown only on a small scale, but this small crop was very good and sound ; braided well ; no second sowing required. *Insects*—No appreciable damage. *Weeds*—Not more injurious than usual. *Pastures*—In the beginning of the grazing season grass was rather backward, but at the back-end it seemed more sappy than usual.

Live Stock—Stock thrive well, and maintained their condition until end of the year. The year was normal as regards sickness and disease in cattle and sheep. *Clip of Wool*—An average clip.

INVERNESS-SHIRE (Lochaber). *Wheat*—None grown in this district. *Barley*—None grown in this district. *Oats*—A good crop, and well harvested; seed sown from 5 to 6 bushels per acre. *Harvest*—Was late. *Hay*—Under the average; thin and in some cases short. *Meadow Hay*—Fairly good. *Potatoes*—Good average; well up to standard. *Turnips*—Good. *Insects*—No injury. *Weeds*—No injury. *Pastures*—Late, but good. *Live Stock*—Thrive fairly well. Cattle and sheep free from disease. *Clip of Wool*—Slightly under the average.

ROSS-SHIRE (Dingwall and Munlochy). *Wheat*—Very little grown; yield 32 to 38 bushels per acre; seed sown, 3 to 4 bushels per acre. *Barley*—Yield 28 to 36 bushels per acre; quality of grain and straw below average; seed sown, 4 to 5 bushels per acre. *Oats*—Yield 44 to 70 bushels per acre; quality of grain and straw below average in many cases. *Harvest*—Began about 28th August, some ten days later than usual; a protracted harvest owing to the very wet season; a great deal of the crop was badly damaged, and most of the stacks were damaged in the heads as they were not thatched before the heaviest rain came. The worst harvest for about twenty-five years. *Hay*—Quantity of hay 1 to 1½ tons per acre; quality good, but a great many lots were damaged by rain. *Meadow Hay*—None grown. *Potatoes*—A poor crop as a rule; yield about 3 to 5 tons per acre; some disease among most varieties; Kerr's Pink had not much disease. *Turnips*—Swede turnips a good yield, but not up to average; about 10 to 18 tons per acre; yellow turnips not nearly so good, and a lot of disease; yield 7 to 12 tons per acre; very little resowing; crop braided well. *Insects*—No damage to crops by insects. *Weeds*—Crops were not injured by weeds. *Pastures*—Average growth and quality. *Live Stock*—Did not thrive so well as usual, owing to the very wet season. Cattle and sheep free from disease. *Clip of Wool*—Clip up to average, and quality of wool good.

ROSS-SHIRE (Tain, Cromarty, and Invergordon). *Wheat*—Average crop about 32 bushels per acre, being about 2 bushels per acre less than last year; quality fair; straw about normal; average sown, about 4 bushels per acre. *Barley*—Average crop about 32 bushels per acre, being about 4 bushels per acre less than last year; quality very poor; weight per bushel very light, and colour much spoilt by continuous rain; straw about normal; average sown, about 4 bushels per acre. *Oats*—Average crop about 46 bushels per acre, being 2 bushels per acre less than last year; quality poor and colour bad, owing to continuous rain at harvest time; straw very heavy, of poor quality; seed sown, 4 to 6 bushels per acre, according to variety. *Harvest*—Started about 18th September, being about a fortnight later than usual. *Hay*—A fair crop, averaging about 30 cwt. per acre, being about 5 cwt. per acre less than last year; quality fairly good. *Meadow Hay*—None grown. *Potatoes*—Average yield about 4 tons per acre, being about 25 cwt. per acre less than last year; blight started early in August and cut the crop very much, especially Edwards in low-lying land, but not much blight in tubers; some Arran Consuls were planted

and did quite well. *Turnips*—Swedes a poor crop ; average about 18 tons per acre, being about 5 tons per acre less than last year ; quality only fair ; yellows a poor crop ; average about 14 tons per acre, being about 1 ton per acre less than last year ; quality only fair ; crop braided fairly well ; not much resowing. *Insects*—No damage by insects. *Weeds*—Owing to wet season, weeds were very difficult to keep down, both in turnips and potatoes, and therefore got a greater hold than usual ; mostly couch and annuals, so that damage caused was more than usual ; charlock as usual bad. *Pastures*—Owing to the wet season there was plenty of pasture, although quality was not so good as usual. *Live Stock*—Stock thrived well. Cattle and sheep free from disease. *Clip of Wool*—Was under average ; quality good.

SUTHERLANDSHIRE.—*Wheat*—None grown. *Barley*—Fair crop of barley, but less grown owing to low prices last year ; plenty of straw, but grain small owing to want of sunshine ; good samples a fair price. *Oats*—Good crop of oats on most farms, and threshed out much better than expected, and secured in much better order than farther south ; much better price than last year. *Harvest*—Did not start till the end of September on the east coast, and very much later inland, but got wonderful weather, and in most places secured in good order ; crops were very much laid in some places, which protracted harvest. *Hay*—A light crop, owing to the very bad weather in May and June ; clover very scarce ; the average crop was about 1 ton per acre ; weather not good during haymaking. *Meadow Hay*—The crop of meadow hay was generally very good, but the weather being very wet was not secured in too good order on the hill farms. *Potatoes*—Very few potatoes grown in this part, and a light crop, with disease very bad in some places, but, where free from disease, good eating. *Turnips*—The early summer being wet, turnips did not do well, and were not got down in good order, but did better in September and October ; when not lifted in December the severe frost damaged them ; did not keep well. *Insects*—Not much damage by insects. *Weeds*—Very bad owing to wet weather. *Pastures*—Any amount of grass, but probably not of such good feeding quality as last year. *Live Stock*—Cattle and sheep thrived very well, but lambs not so good owing to bad weather in May and June ; quite an average crop of lambs on most farms. Cattle and sheep quite free from disease ; no grass disease in this district among horses. *Clip of Wool*—Was not so heavy as usual, but quality good.

CAITHNESS-SHIRE. *Wheat*—None. *Barley*—Grows well and ripens early ; is generally the first cut, and is highly esteemed as poultry food for inducing egg-laying ; its use for distilling has been on the wane in recent years, and cultivation is decreasing. *Oats*—Usual quantity 4 to 6 bushels per acre sown ; had a fine dry seed-bed in March, then the weather broke, and the ground became claggy and wet throughout April, with intense night frosts, owing to which the bulk of the oats were sown in May ; those down in March, though nipped by frosts, kept ahead, and were cut in September ; the late sown were harvested in October or November ; the cutting was not very difficult, but it was "stook drill" over and over again ; the weather was unusually warm, and laps of growing corn in sloping sheaves

made it a damaged crop and difficult to secure when spate followed spate; small field screws became the best resource for saving the crop. *Harvest*—The bulk of the grain crops was not ready for harvest till about four weeks later than usual; dull, close, foggy weather continuously for more than a week in August was against all the crops. *Hay*—The hay crop was about one-third less in quantity than last year, not much over 1 ton per acre; the aftermath came to very little; after the hay was cut and put up in coils, dull weather without breezes prevented the drying, and the hay became musty and needed spreading out again in many instances. *Meadow Hay*—Suffered from the unfavourable season, and was not up to the usual quantity or quality. *Potatoes*—Crop was poor as to yield, and resembled 1923; 4 to 5 tons, contrasted with 9 tons per acre last year; the growth seemed checked in August, and it needed the produce of 20 or 30 yards of a row to fill a zinc pail; those sprouted in boxes were more advanced, and they had come to a fair size before the blooms got black, owing to blight or other disease; rooks preyed on the finer kinds. *Turnips*—Looked well in August, but the rainfalls afterwards checked the bulbing; they were small, and 15 tons per acre was regarded as a high yield for the season; the crop braided all right, and the early sown came on best and some ran to seed; the softer kinds became affected by black frosts, being unprotected by snow. *Insects*—No complaints of attack by leather-jackets (Daddy Longlegs) during this year; the frosts in the spring apparently curbed the usual ravages. *Weeds*—Were rampant among the rows of turnips and potatoes, as scuffling could not be done in the wet weather; thistles were still too abundant, and coltsfoot continued to spread. *Pastures*—Continued to grow, and wild white clover showed well in many parts of old leys, and in parts where it had not been sown; cocksfoot grass persists better than ryegrass. *Live Stock*—Stock thrived, notwithstanding the late harvest; wild white clover got the blame of causing "rushing" in cattle and sheep, but rib-grass is thought to act as a corrective; liver fluke is to be watched for after the rains. Caithness, like Orkney, was entirely free from foot-and-mouth and other disease, and produced healthy stock. *Clip of Wool*—Good; Cheviot, Leicester, and Half-Bred wool were in request by manufacturers.

ORKNEY. *Wheat*—None grown. *Bere*—36 bushels per acre, weighing 49 lb. per bushel; seed sown, $3\frac{1}{2}$ to $4\frac{1}{2}$ bushels per acre. *Oats*—A fair good crop; about 32 bushels per acre, weighing 39 lb. per bushel; not quite so good as last year. *Harvest*—Began in the first week of October and was finished about the end of November, being later than usual; the month of June was exceptionally cold and wet; July, on the other hand, was calm and sunny, with occasional showers, and all crops made rapid progress. *Hay*—A fair good crop, weighing 25 cwt. per acre. *Potatoes*—A fair good crop, weighing about 5 tons per acre, being about the same as last year. *Turnips*—A fair good crop, weighing about 12 tons per acre, being 2 tons per acre less than last year. *Insects*—Did little injury to the crops. *Weeds*—Did some injury to the crops during the cold wet weather in spring. *Pastures*—Were very good, due largely to the use of wild white clover. *Live Stock*—Cattle and sheep thrived well, and were healthy. *Clip of Wool*—Was about an average.

SHETLAND. *Wheat*—None grown. *Bere*—Average about 32 bushels per acre, weight 50 to 51 lb. per bushel. *Oats*—30 bushels per acre, weight about 38 lb. per bushel; quality fair; straw light. *Harvest*—Was about two weeks later than usual, and the crop in most cases was not secured until about the middle of November. *Hay*—The hay crop was rather heavier than last year, about 35 cwt. per acre; quality was good, with a fair amount of clover. *Meadow Hay*—Was also heavier than last year; the hay crops were secured in good condition; 24 cwt. per acre. *Potatoes*—The potato crop was rather below last year's average, about 6 tons per acre; quality was fair; there was no disease. *Turnips*—Crop in most cases turned out poorly; it came away all right to start with, but canker and finger-and-toe started later on, and destroyed most of the crop; it is difficult to give an estimate of the weight per acre owing to disease, but, roughly, swedes would be 6 to 7 tons, and yellows about 11 tons per acre. *Insects*—No damage was done by insects. *Weeds*—The crops were very free from weeds, and no damage was done. *Pastures*—The pastures were destroyed by keen frosts in April and May; weather was cold until the end of June, when warmer and better weather came; the grass grew quickly, there being abundance by the middle of July. *Live Stock*—Stock did not thrive very well; when the rush of grass came it seemed to be too soft, and did not fatten animals as it should have done. Cattle and sheep were free from disease. *Clip of Wool*—The clip was rather under last year, but quality similar to other years.

THE WEATHER IN SCOTLAND IN 1927.

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THIS report consists of (1) a general description of the weather from month to month ; and (2) a selection of rainfall returns in which each county of Scotland is represented by one or more stations. It is to be noted that all the temperature readings referred to are, unless otherwise stated, from the thermometers exposed in the regulation "Stevenson Screen."

JANUARY.

The weather of the month was of an extremely stormy and unstable type ; the mean level of the barometer was the lowest recorded in January since 1915 ; and the contrast with the closing month of 1926—a dry month in most districts, with a mean barometric pressure the highest ever recorded in Scotland in December—was remarkable.

The mean temperature of the month was rather above the normal, although the third week was very wintry (10° at Braemar on 20th). Earlier in the month a sharp touch of cold around 4th was followed by very mild weather for several days around 9th, and during the last week temperature, though never high, was at times slightly above the normal.

Rainfall was decidedly above the normal over the greater part of Scotland, though slightly below it in some eastern districts, but nowhere was the month so wet as the January of 1921. Falls exceeding 2 in. in twenty-four hours, or more than the rainfall of the whole month at Aberdeen or Dundee, occurred at Kinlochquoich, in West Inverness-shire, on 2nd, at Gruline (Mull) on 12th, and at Achnacarry on 27th. In west and south rain fell on every day from 1st to 16th, and on 20th another wet period set in in the west, extending to all districts on 24th.

Snow fell rather widely around 4th and 20th.

Thunder occurred somewhere in the west on almost every day from 23rd to 31st.

Sunshine amounts were slightly above the average in the east, but in the west a good deal of fog was experienced.

FEBRUARY.

The first two days were cold, and between 8th and 18th some severe frosts occurred. The last two weeks, however, were for the most part mild, and the mean temperature of the month was appreciably above the average.

Rainfall aggregates were decidedly deficient in most districts, though but slightly so here and there in the west and a little above the normal in parts of the Loch Fyne area. Light to fairly heavy rains were more or less general from 2nd to 6th, and a fall of 1.34 in. at Inveraray on 3rd exceeded the rainfall for the entire month at Edinburgh, and was practically twice the aggregate for Kelso. From 8th to 18th considerable areas were rainless or nearly so, though in some districts moderate falls occurred around 13th. Rain was again more or less general from 19th to 22nd and from 24th onwards, and in some eastern districts a large part of the month's moderate rainfall was accounted for during the last ten days.

Wind force was on the whole moderate, and some trifling snowfalls which occurred here and there in the month were unimportant.

Thunder occurred in Shetland on 2nd and 24th, and in parts of Forfarshire on 12th and 16th.

In most districts fog was rather prevalent, and sunshine aggregates hardly reached the average. The Moray Firth area, however, was conspicuously sunny.

MARCH.

Judged by its mean temperature, the month may be catalogued as the mildest March experienced in Scotland since 1893, or possibly since 1882. Ground frost did, indeed, occur in many districts on several nights, and an incursion of cold air around 14th was notable; but there was much mild weather, and for two or three days around 20th temperature was exceptionally high for the time of year. The thermometer ranged from 65° at Smeaton and 64° at North Berwick on 21st to 18° at Balmoral on 13th.

Early in the month rain was frequent, but only in the west were amounts at all heavy, and that only on one or two days. On 10th a fine spell set in, and this lasted in the east almost unbroken until 22nd, whilst in the west rain became general on 18th. In nearly all districts the period from 22nd to 27th was unsettled, with fairly heavy falls on 22nd, 25th, and 27th. At no time, however, was there anything approaching in intensity the extremely heavy rains which were experienced in western districts early in March 1926. In most

northern districts the month's rainfall was decidedly below the average, whilst towards the south areas of moderate excess alternated with areas of moderate deficiency.

From 25th to 27th stormy weather prevailed, and on the afternoon of 26th a thunderstorm visited some central and eastern districts. There were sporadic thunderstorms on 22nd or 23rd.

Snow fell on high ground in some districts on two or three days, but there was no very general fall.

Fog occurred at times; but in most districts sunshine aggregates differed little from the average.

APRIL.

During the first half of the month temperature was more often than not above the average, and from 17th to 21st there was an exceptionally warm spell for the time of year (66° at Aberdeen on 17th). A reaction from this was sudden and extraordinary; the mean temperature of the fourth week of the month was at many places more than 10° below that of the third; and the weather was as cold as that to be expected at the beginning of an average January. The lowest readings reported were 17° at Balmoral on 29th and 19° at Eskdalemuir on 28th.

Relatively to the average, the month's rainfall showed unusually wide variations. In some eastern and southern districts there was an appreciable shortage, but elsewhere there was an excess, and in the north-west of Scotland this was very large. Thus part of Sutherlandshire had fully thrice the average, and West Inverness-shire fully twice. The heaviest falls of the month occurred towards north-west and north from 18th to 21st, with a four days' aggregate at Kinlochquoich of as much as $7\frac{1}{2}$ in., of which as much as $2\frac{1}{2}$ in. fell on 20th and again on 21st. Early in the month conditions were generally unsettled, and during the last week precipitation in eastern districts consisted largely of snow.

Towards the end of the month stormy weather was experienced, and snow occurred, rather widely, but chiefly in east and north, during the last week. In Shetland and some northern districts, including Morayshire, conditions between 20th and 29th amounted to a "blizzard," and the storm was one of the worst on record. Snow occurred also in some districts between 8th and 11th, and a sudden snowfall on the evening of 30th in the Lothians was notable.

Thunder occurred in various districts on several days, notably in some eastern areas on the evening of 30th.

Sunshine aggregates were above the average in the east, but deficient towards the north-west.

MAY.

On the morning of 1st May extremely low temperatures were recorded (16° at Braemar and 18° at Eskdalemuir); but a week later a brief outburst of warmth was experienced in western and southern districts, with 80° at Colmonell in South Ayrshire on 8th, and 79° at Kilmarnock. At Aberdeen the thermometer on that day did not rise above 57° , and for a day or two the contrast between conditions on the east coast and those on the west was remarkable. From 10th onwards temperature seldom rose above a moderate level, though it was fairly high about 24th.

In most southern and north-western districts the month's rainfall was decidedly deficient; but in the Spey Valley, around Loch Fyne, and in the Firth of Clyde regions there was a well-defined excess, largely accounted for on two or three days. The generally wettest period was from 2nd to 4th, and at Edinburgh more than half of the month's aggregate was accounted for by a fall of 1.23 in. on 4th. For a week or so thereafter considerable areas were rainless, but on 8th a sporadic thunderstorm brought irregular falls of varying amount. Conditions were unstable from 13th to 16th, and again from 20th to 23rd, with further irregular thunderstorm rains on 16th.

A little snow or sleet fell in some districts on two or three days, and the melting of the deep snow which lay on the northern mountains at the end of April caused some flooding, especially in Perthshire.

Thunderstorms occurred here and there on 7th, 21st, and 31st, whilst the storms of 8th and 16th were fairly widespread. That of 16th was of considerable intensity in the Glasgow area.

At Aberdeen the month was the cloudiest May for at least forty years, and in north and east generally it was very cloudy. In west, on the other hand, sunshine aggregates were much above the average.

JUNE.

For Scotland as a whole the month ranks as much the coldest June for at least sixty years, and probably the coldest for a very much longer period. For Edinburgh records are available from 1764 onwards, and the month appears to have been the coldest June experienced in the Scottish capital at least as far back as that distant date. Destructive ground frost occurred in many districts on several nights, but, on the whole, the temperature deficiency was more marked by

day than by night. Only for two or three days during the third week was there any approach to a moderately high temperature, and on 17th the thermometer at a few places reached 70°.

The month was not only cold but wet, and in all districts rainfall was above the average—a very unusual occurrence in a summer month. In some northern and western areas amounts were as much as twice the average. The heaviest general rains occurred on 16th. With the approach of an Atlantic depression, several very fine days in the west terminated with moderate rains on 15th, and on 16th wide areas had more than 1 in., and part of Loch Katrine area fully 2 in. Moderate rains were more or less general on some days early in the month. On every day from 16th to 22nd there were more or less heavy falls in many districts, and thereafter conditions were rather less unstable.

Snow fell on high ground early in the month and around 22nd, and on 21st a westerly gale did considerable damage in some districts.

Thunderstorms were frequent; and a storm on the afternoon of 17th, when extensive damage to the town steeple at Falkirk was a remarkable episode, was somewhat widely experienced.

There were some very sunny days, mostly during the coldest periods, and in western districts sunshine aggregates were above the average.

JULY.

The mean temperature of the month was in most districts appreciably above the average. High day temperatures, however, were infrequent, and any temperature excess was mainly due to the frequent occurrence of decidedly warm nights. On 10th, Ruthwell, near Dumfries, reached 82°, and in many districts the 10th and 17th were the warmest days. From 15th to 19th the nights were relatively cool.

In some northern districts rainfall was much below the average; but elsewhere, with frequent thunderstorms, the distribution was irregular, with a slight shortage in some districts, but at Blair Atholl and Dumfries more than twice the average. In the extreme north hardly any rain fell until 20th, and the period from 14th to 18th or 19th was everywhere dry. From 3rd to 7th conditions were unsettled in most districts; on 10th and 13th there were some heavy local falls; and some heavy falls occurred on 20th, 21st, 27th, and 28th. On 5th, Pitlochry had as much as 2.14 in. There appear to have been very intense downpours in short periods over limited areas. Thus on the afternoon of 21st, in Dum-

bartonshire, Rosneath had as much as 2·93 in., or four times the rainfall at Banff for the entire month, but Arrochar on the same day had only a trifling fall.

The frequency of thunderstorms was quite abnormal, and they occurred very locally or over more or less wide areas on as many as twenty-one days of the month. The only continuously stable period was from 15th to 19th, when pressure was high. The most widespread storms were experienced on 21st, when serious flooding occurred in the Glasgow area, and on 27th. Others of importance occurred in north-east and east on 5th, and rather widely on 10th, 11th, and 13th.

Sunshine aggregates were above the average in the north-west and north; but on the north-east coast dense fog occurred around 7th and 22nd, and at Aberdeen the month was decidedly cloudy on the whole, whilst Edinburgh had about its average allowance of sunshine.

AUGUST.

The mean temperature of the month was again appreciably above the average, with highest readings during the first week and during the last few days (76° at Dumfries and Turnberry on 6th). Night temperature was as a rule relatively high, but rather low about 16th and 25th (30° at Braemar on 25th).

In north and north-west rainfall was much below the average; but elsewhere, except over a limited area in the south-west, much above it. At Edinburgh the month was the wettest August since 1877. Conditions were generally unsettled until the last few days of the month, and with a great part of the rainfall of thunderstorm origin exceptionally heavy falls due to local "cloudbursts" were recorded in many districts, particularly from 5th to 12th, with as much as 3·46 in. at Invermearn, in Glenlyon, on 5th.

Thunderstorms occurred over limited or more or less wide areas on as many as twenty-one days—on 1st, and on each day from 4th to 13th, from 17th to 19th, from 21st to 24th, and on 26th, 28th, and 30th. The most general storms were those of 5th and 9th, which involved the greater portion of Scotland south of the Caledonian Canal, and resulted in serious flooding in Central Perthshire and the Lothians. Others of importance occurred on 21st in north and north-east, and on 23rd in south and south-west.

Sunshine aggregates were deficient in southern districts, but above the average towards the north.

SEPTEMBER.

Temperature was fairly high during the first few days, but thereafter never rose above a very moderate level. Indeed, over considerable areas the thermometer did not read 70° on any single day. The mean of the month was appreciably below the average.

In all parts of the British Isles the month was extremely wet, and at Edinburgh (7·91 in.) the aggregate was the highest recorded in any one month since August 1877, and the heaviest for any September since 1785 (10·69 in.) The first few days were comparatively fine, but on 6th wet weather set in, with some heavy falls, and after a slight lull from 11th to 15th, even wetter weather developed. From 20th to 22nd exceptionally heavy falls occurred, especially in eastern areas. At Edinburgh rain commenced to fall about 10 P.M. on the evening of 20th and continued without cessation until the afternoon of Thursday, 22nd.

Thunderstorms, while not so frequent as in the months of July and August, occurred, nevertheless, on as many as nine days. On the morning of 7th a very violent thunderstorm, the worst in some places for over fifty years, accompanied by torrential rainfall, broke over south-eastern Scotland, causing extensive flooding and very serious material damage, particularly in the Lothians and Border counties.

Sunshine aggregates were mostly much below the average, but slightly above it in Orkney and at Edinburgh.

OCTOBER.

The mean temperature was everywhere, except in Orkney and Shetland, appreciably above the average. The third week, indeed, with northerly winds, was extremely cold; but the earlier part of the month was rather mild, and the last ten days abnormally so, with some high night temperatures, notably from 25th to 27th.

Here and there rainfall was below the average, but in general there was an excess, and this was most marked in some northern districts. Heavy rains on 1st, and in north and east on 2nd, were followed by a dry spell which lasted almost unbroken in some districts until 20th. On 21st a very wet period set in, though the extreme north was at first but little affected. The most general rains occurred from 25th to 28th. Such heavy falls as 2·20 in. at Inverchaolain, on Loch Striven, on 21st, and 1·70 in. at Arrochar on 28th, may be noted.

A westerly gale was general on 2nd, and from 27th to

29th very stormy weather prevailed. Snow fell here and there on 2nd and 20th.

Thunderstorms occurred here and there on several days, but the areas affected appear to have been very limited.

Fog occurred at times, but some very sunny days brought sunshine aggregates in most districts to about the average figure.

NOVEMBER.

The abnormally mild weather which set in about 21st October persisted during the first three days of November (65° at Kelso on 2nd). By 6th, northerly winds had developed, and there was a striking transition to a very wintry type of conditions which lasted for about ten days. From 16th onwards temperature was, for the most part, moderately high, though rather low around 20th and on 30th.

Heavy to very heavy rains were general on 1st, and considerable areas had more than 2 in. (2.73 in. at Inveraray). Further rather heavy falls were experienced in east until 3rd and in west until 5th. During the cold spell snow occurred, and nearly everywhere except in the extreme north there were moderate to very heavy rains between 15th and 18th—at Lochgoilhead as much as 3.15 in. on 18th,—and between 23rd and 28th there were some rather wet days, except in some eastern districts. Aggregates were above the average towards south-west and in extreme north, but generally deficient towards the south-east.

Stormy weather prevailed at the beginning of the month, and for some days around 21st.

Snow fell in the north and on the Borders on 7th, with some further heavy falls in the north on several days thereafter, and serious drifting in some districts.

The period from 18th to 23rd was very cloudy, but sunshine aggregates for the month were fully equal to the average, and in the north decidedly above it.

DECEMBER.

The mean level of barometric pressure was much above the average, and there was a remarkable predominance of winds from a northerly or easterly point.

Temperature was moderate for the first week or so; but soon a very wintry type of weather developed, and this was hardly interrupted except from 21st to 24th. On 17th and 18th the thermometers at Braemar and Logie-Coldstone fell to 0° F.; but the most notable feature of the month was the persistent coldness of the days.

Towards the north-west of Scotland rainfall aggregates were amazingly small; considerable areas had only 5 per cent or less of the average; and undoubtedly the month was much the driest December on record. Glenquoich, in West Inverness-shire, had only 0.50 in. as compared with an average of about 14 in. Everywhere in the west the month was notably dry; and, in eastern districts, only in East Lothian and part of Forfarshire did precipitation equal or exceed the normal. In east aggregates were largely accounted for by snow on 14th, and by rain or snow on 21st, 22nd, and 26th. In south and west there were moderate falls on 5th, 14th, 21st, 22nd, and 31st. . .

Wind force was high around 5th, and for the greater part of the month very stormy weather prevailed in the North Sea.

In north-east and east snow fell between 15th and 19th, with further heavy falls from 24th onwards. In some areas, notably in parts of Morayshire and Banffshire, there was extensive blocking of roads by deep snowdrifts. Towards south-west no snow was experienced until 31st.

No thunder was reported.

In eastern districts the month was almost continuously gloomy until the last week, but in west and north-west sunshine aggregates were above the average.

General Note.

The year was perhaps most notable for the excessive rainfall of August and September; the frequency of thunderstorms during summer; and the cold weather of December, with hardly more than nominal precipitation in north-western districts in that month. The general rainfall of Scotland was above the average, but at, for example, Edinburgh, the total was less than 1916.

RAINFALL RECORDS FOR 1927, IN INCHES.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Shetland—Lerwick	6.94	3.22	3.97	6.03	1.84	2.85	1.96	1.25	3.60	3.56	6.05	1.59	42.86
Orkney—Kirkwall	3.44	2.13	2.55	5.65	1.52	3.38	1.23	.74	2.95	5.89	4.61	1.43	35.52
Caithness—Wick	2.46	1.98	1.61	4.21	2.07	2.89	1.28	2.00	3.28	4.00	3.63	.88	30.29
Sutherland—Tongue	4.51	1.25	2.15	4.97	2.10	4.49	1.77	2.88	5.71	6.22	4.83	.90	41.78
Laing	5.98	1.90	2.80	5.23	1.01	3.24	3.42	1.90	4.83	4.73	4.07	1.11	40.57
Ross and Cromarty—													
Fortrose	2.24	.82	1.17	1.67	1.86	2.56	2.26	2.78	5.34	3.91	2.36	.86	27.83
Ardross Castle	5.47	1.15	1.88	3.27	2.37	3.44	3.50	3.76	6.43	6.70	3.25	1.71	42.99
Lochacarron	10.74	3.02	6.00	11.18	4.11	5.54	3.94	4.49	8.83	10.46	7.82	.30	75.93
Stornoway	6.88	2.13	2.82	6.47	1.81	3.76	3.92	2.72	6.12	7.87	5.47	1.17	50.64
Inverness	3.77	.94	1.59	1.97	1.98	2.76	2.91	3.83	5.66	4.31	2.08	1.24	32.99
Inverness—Kingsale	4.40	.94	1.22	3.52	2.87	2.68	2.28	4.26	3.85	4.05	3.65	.52	33.74
Fort-William	13.84	4.14	4.86	9.43	3.11	5.71	4.07	7.06	7.51	7.53	8.31	.48	76.04
Kinlochquich	20.10	5.29	8.33	16.60	4.48	8.19	4.88	6.73	10.80	12.16	11.61	.39	109.01
Portree	12.23	3.22	5.28	8.70	3.74	5.12	4.03	4.97	6.10	9.43	9.01	.77	72.60
Nairn—Nairn (Deinies)	2.52	.99	1.68	2.10	2.30	3.51	1.76	3.05	5.11	3.93	2.56	1.08	30.54
Moray—Gordon Castle	2.15	1.20	2.18	2.80	2.44	4.16	1.16	2.06	6.08	4.32	2.83	2.24	34.47
Grantown	3.42	.76	1.37	3.83	4.11	4.09	3.17	3.65	6.03	4.25	3.93	1.34	40.45
Banff—Banff	1.56	1.53	1.57	2.80	2.27	2.70	.73	2.09	7.38	4.08	4.02	1.46	40.45
Aberdeen—Fyvie Castle	2.23	1.10	2.71	3.87	3.54	3.62	1.43	2.03	7.22	3.91	5.64	3.22	40.49
Peterhead	1.89	1.79	2.18	3.13	3.30	2.73	2.28	1.28	6.61	4.27	3.96	2.02	35.64
Aberdeen (King's Coll.)	1.87	1.83	2.04	2.85	2.58	2.53	1.88	2.26	6.38	3.84	3.99	2.46	33.51
Balmoral	3.79	.87	2.29	2.85	3.21	3.42	3.46	4.40	4.38	4.53	2.77	2.85	38.82
Kincardine—													
Balmakewan	1.90	1.89	2.25	1.56	2.65	3.46	1.81	3.56	5.30	5.13	3.05	3.77	36.33
Forfar—Montrose	1.64	1.22	2.10	1.16	2.02	2.22	1.89	2.78	6.28	4.95	1.91	2.07	30.72
Dundee (E. Necropolis)	1.91	1.31	2.41	.96	2.39	2.53	2.17	5.58	5.82	5.26	2.97	2.02	34.83
Glamis Castle	3.01	1.76	3.26	1.50	2.72	2.68	2.74	4.23	4.41	6.12	2.84	2.78	38.08
Lednathie	4.15	4.32	2.88	1.94	2.10	4.61	3.75	6.00	4.89	6.58	5.30	3.54	50.66
Perth—Blair Castle	4.85	1.26	2.62	2.01	2.41	2.61	5.77	4.25	4.10	6.88	2.92	1.34	38.52
Orrieff	5.01	2.15	3.99	1.42	2.03	4.80	4.65	6.88	3.91	6.12	3.35	1.76	45.87
Perth	2.85	1.31	2.39	.92	1.05	2.85	3.50	3.84	4.21	4.84	2.37	1.68	34.23
Killin	12.41	2.03	4.39	4.03	2.75	3.97	3.92	6.89	6.34	6.66	6.19	1.65	61.83
Fife—Cupar	2.42	1.07	2.29	1.20	2.45	3.16	2.99	4.00	5.85	4.46	2.10	2.40	33.48
Kirkcaldy	2.02	1.64	2.04	1.35	2.83	3.59	2.72	6.03	6.86	4.09	1.59	1.71	36.07
Kinross—Loch Leven	3.19	1.79	2.81	.99	2.32	3.38	3.42	7.10	7.46	5.57	3.56	2.03	41.62
Clackmannan—													
Tillicoultry	3.88	2.22	2.62	1.76	2.57	4.43	5.16	7.90	5.20	5.19	3.52	1.38	45.92
Argyll—Gruline (Mull)	14.41	6.57	5.05	7.35	3.80	6.08	3.19	3.80	6.21	6.08	7.72	1.37	73.58
Oban	8.91	3.62	3.86	4.95	2.74	4.73	3.83	5.29	5.46	7.26	5.42	.26	56.33
Glenorchy Manse	13.71	4.51	5.44	9.02	4.62	6.65	4.61	3.12	8.64	9.24	8.90	.96	84.42
Inveraray	15.93	7.05	7.00	7.26	4.96	6.52	4.46	8.52	9.75	10.31	10.69	.91	93.26
Campbeltown	7.49	3.67	4.47	8.77	3.19	4.73	3.67	3.86	4.92	5.42	6.35	1.77	53.21
Bute—Rothsay	7.99	3.20	6.05	4.77	4.21	4.85	4.43	5.33	7.66	6.16	5.45	1.63	59.93
Stirling—Stirling	5.09	2.46	3.04	1.68	2.51	3.94	3.87	6.85	5.96	5.70	3.08	.99	45.37
Dumbarton—Arrochar	15.50	6.93	8.91	8.54	5.01	7.52	6.39	9.78	8.89	13.59	10.45	.237	103.88
Helensburgh	6.99	4.78	5.03	3.62	3.37	5.54	4.68	5.93	8.06	7.50	6.14	2.15	63.79
Renfrew—Greenock	9.94	4.25	4.76	4.10	4.23	4.64	4.75	6.86	9.94	9.11	8.28	1.38	70.59
Falsley	6.38	2.73	3.13	2.31	2.56	4.08	4.06	6.08	6.81	6.07	4.20	1.54	49.95
Ayr—Kilmarnock	5.03	2.23	2.46	3.81	1.96	4.94	4.51	4.08	7.08	4.43	4.98	.78	46.19
Ayr	5.07	1.85	2.70	3.18	2.26	4.10	2.27	4.79	6.42	5.20	5.92	.77	44.53
Muirkirk	7.33	2.81	3.98	3.90	2.14	4.53	4.96	5.42	6.68	5.28	5.27	1.49	53.74
Pinnore	7.21	2.78	6.09	3.27	2.83	4.50	3.69	3.24	6.92	5.45	5.75	1.60	53.33
Leven—													
Glasgow (University)	4.94	2.40	2.76	2.39	2.50	3.96	4.03	6.01	5.66	4.98	3.79	1.16	44.57
Biggar	4.35	1.44	2.80	2.26	1.62	3.74	2.40	5.76	6.58	5.79	3.42	1.28	39.44
Elvanfoot	9.40	3.15	5.50	5.20	3.40	6.10	5.31	7.20	10.00	9.45	9.13	2.15	75.99
Linlithgow—													
Linlithgow	3.81	1.82	2.74	1.51	2.14	3.41	3.64	7.15	5.79	4.71	2.20	1.77	40.69
Mid-Lothian—													
Edinburgh (University)	2.08	1.04	1.36	1.54	2.03	3.42	2.43	7.12	7.81	2.97	1.32	1.67	34.79
Oxenford Castle	1.67	.76	1.62	1.05	1.58	3.30	2.43	6.42	7.67	2.79	1.90	1.43	32.62
Haddington—													
North Berwick	1.25	.97	1.57	.59	1.37	1.94	2.12	5.72	5.40	2.88	1.86	2.80	28.62
Stobshiels Reservoir	1.62	.87	2.61	1.09	1.54	2.60	2.68	6.68	7.24	2.58	3.12	2.80	37.38
Berwick—Duns Castle	2.04	.82	2.54	1.60	2.64	3.56	3.53	6.81	5.96	2.22	3.27	2.35	37.34
Coldstream (The Hirsell)	1.75	.70	1.44	1.16	1.61	3.22	3.22	6.37	5.38	1.61	2.76	2.53	31.95
Peebles—West Linton	4.03	1.61	3.09	3.28	2.08	3.94	2.61	6.74	8.03	4.89	3.59	1.87	45.76
Selkirk—Fairlie	3.89	1.40	2.81	2.30	1.79	2.98	2.44	6.80	9.35	4.00	2.71	2.32	42.70
Roxburgh—													
Branksome	3.86	1.07	1.94	1.57	1.30	3.08	2.60	5.71	6.74	4.00	2.99	2.17	30.53
Kelso (Brooklands)	1.87	.68	1.76	1.37	1.49	2.66	2.78	6.04	4.70	1.77	2.27	2.00	29.39
Dumfries—Dumfries	3.69	2.38	3.19	1.74	2.15	3.77	7.10	5.98	6.01	4.10	3.98	1.61	45.60
Moniaive (Glencrosh)	6.24	3.54	4.36	3.13	3.51	3.79	5.74	7.16	7.00	5.30	5.05	2.06	57.38
Castle Milk	4.82	2.69	3.49	2.37	2.96	4.34	3.94	6.80	6.02	3.56	4.47	1.69	47.15
Langholm	6.45	3.75	4.00	3.47	2.56	4.69	4.82	7.87	5.78	6.55	5.77	1.57	57.88
Kirkcudbright—													
Gargon	5.43	3.21	4.03	2.38	2.65	4.43	6.28	7.15	7.66	4.90	4.46	2.16	55.79
Dalbeattie (Kirkcannan)	4.98	3.83	4.32	2.52	2.61	4.83	4.24	7.68	6.32	5.34	6.38	2.12	57.93
Carsphairn (Shiel)	11.59	4.84	8.00	5.90	4.28	6.65	6.37	7.72	8.57	9.26	7.80	2.14	83.02
Wigtown—Monreith	4.27	2.66	4.09	1.94	2.71	3.48	2.28	3.64	6.30	4.59	5.13	2.42	43.46

TABLE No. 2.—TOTAL PRODUCE OF WHEAT, BARLEY, AND OATS, AVERAGE AND YIELD per Acre in the Year 1926, compared with the YIELD for the Year 1925, and the AVERAGE of the Ten Years, 1916-1926, in each COUNTY OF SCOTLAND.

COUNTIES.	WHEAT.					BARLEY, INCLUDING BEER.					OATS.					
	Total Produce in 1926.	Acreage in 1926.	Yield per acre.		Average of the Ten Years 1916-1926.	Total Produce in 1926.	Acreage in 1926.	Yield per acre.		Average of the Ten Years 1916-1926.	Total Produce in 1926.	Acreage in 1926.	Yield per acre.		Average of the Ten Years 1916-1926.	
			1926.	1925.				1926.	1925.				1926.	1925.		
																Bush.
Aberdeen	..	269	34.2	30.0	30.3	62,000	14,494	34.1	34.1	31.8	925,000	185,425	39.9	38.3	35.3	
Argyll	..	..	..	..	+36.0	4,500	1,049	34.3	33.9	35.2	74,000	15,362	38.0	36.1	35.3	
Ayr	..	5,300	49.2	45.0	45.5	720	1,144	40.0	39.9	38.5	238,000	39,480	48.3	42.1	46.1	
Banff	..	..	..	..	+30.0	33,000	6,338	41.1	41.7	37.0	260,000	47,424	43.9	48.8	41.2	
Berwick	..	7,700	43.3	39.3	37.9	50,000	13,029	30.7	34.3	33.8	147,000	28,169	41.7	38.9	37.9	
Bute	..	..	..	..	38.0	40	9	88.0	39.0	40.2	24,000	4,712	40.9	40.9	41.3	
Cathness	..	..	..	..	35.8	2,700	544	40.5	36.4	33.1	139,000	28,993	38.2	37.6	32.1	
Clackmannan	..	1,600	40.4	37.9	38.5	460	93	39.9	40.0	35.6	17,000	2,882	46.9	47.3	40.1	
Dumfries	..	1,900	38.8	40.1	36.1	10	4	34.0	18.1	37.1	39,000	6,889	46.9	38.4	41.2	
Dumfriesshire	..	160	32	39.5	46.8	320	64	40.0	41.4	38.2	190,000	26,841	41.3	38.2	38.3	
East Lothian	..	26,000	42.6	42.5	43.1	42.9	77,000	13,269	46.4	47.3	44.2	118,000	16,293	56.8	53.5	50.6
Fife	..	50,000	4,846	33.0	39.6	36.8	50,000	11,016	36.2	42.7	39.8	278,000	44,861	49.6	49.1	45.5
Forfar	..	47,000	10,086	37.2	39.5	35.6	66,000	13,890	38.3	38.8	34.7	371,000	57,862	51.3	51.2	48.3
Inverness	..	150	33	36.8	..	39.9	15,000	4,121	29.4	26.1	25.7	106,000	29,227	28.9	27.9	28.7
Kincardine	..	5,200	1,046	40.0	34.2	35.8	33,000	6,979	38.1	36.3	35.2	194,000	31,516	49.7	45.9	41.5
Kinross	..	1,000	240	35.0	38.6	38.3	260	65	32.4	31.9	35.4	41,000	6,707	48.5	39.2	38.5
Kirkcubright	..	170	37	36.2	39.9	35.6	40	10	35.2	37.2	38.1	94,000	21,643	34.9	38.9	34.9
Leamark	..	8,800	1,896	37.3	34.1	34.8	300	75	32.4	30.2	33.6	190,000	37,195	40.8	38.5	43.4
Mid-Lothian	..	30,000	5,872	45.3	45.2	43.2	20,000	3,752	43.7	43.0	41.1	135,000	21,105	51.1	47.0	45.5
Moray	..	2,300	43.0	41.9	41.7	40.8	42,000	7,905	42.1	39.0	36.6	139,000	25,366	43.7	43.0	41.8
Nairn	..	..	..	..	..	38.2	8,200	2,038	39.5	32.2	30.6	29,000	6,502	35.4	33.1	32.2
Orkney	..	..	..	..	..	36.0	15,000	3,454	35.3	35.1	30.5	160,000	32,519	39.5	39.3	30.0
Perth	..	..	..	..	..	34.3	240	47	40.8	31.1	31.0	33,000	5,899	45.3	37.0	34.3
Perthshire	..	32,500	7,377	35.2	39.8	38.2	12,000	2,793	34.2	37.6	35.7	363,000	67,779	42.9	47.0	44.8
Renfrew	..	7,700	1,562	39.4	40.7	42.5	10	2	36.0	35.0	36.2	50,000	9,755	41.4	38.2	45.2
Ross and Cromarty	..	8,800	692	43.5	45.0	43.0	28,000	6,506	34.2	35.4	32.5	168,000	31,759	42.4	42.5	39.9
South Ayrshire	..	2,300	44.3	41.7	40.2	36.5	31,000	7,034	32.3	37.7	35.7	121,000	24,286	39.8	38.8	37.1
Selkirk	..	..	..	..	..	38.0	680	156	32.2	33.8	35.6	17,000	3,781	35.1	28.2	33.2
Shetland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Shetland	..	7,900	1,927	34.8	38.2	40.1	2,500	603	32.8	30.7	25.8	22,000	6,174	28.4	26.7	23.3
Strirling	..	..	..	..	..	40.1	2,300	568	31.8	28.4	37.0	121,000	17,985	53.7	49.0	42.4
Sutherland	..	..	..	..	..	43.6	1,200	248	37.7	37.8	34.8	62,000	7,294	35.0	35.2	33.2
West Lothian	..	14,000	2,494	44.0	47.0	43.6	7,800	1,291	47.9	44.0	44.5	36,000	10,636	49.5	53.7	50.0
Wigtown	..	250	33.9	35.2	37.8	37.8	700	137	40.4	50.7	39.2	130,000	27,662	37.6	40.3	37.8
Total all Scotland	255,990	53,777	38.1	40.5	38.8	566,980	122,297	37.1	38.2	35.6	5,031,000	940,073	42.8	41.6	39.5	

* Average of 5 years only.

† Average of 9 years only.

‡ Average of 6 years only.

§ Average for 8 years only.

TABLE NO. 3.—TOTAL PRODUCE OF BEANS AND POTATOES, ACREAGE AND YIELD per Acre in the Year 1926, compared with the YIELD for BEANS for the Year 1925 and for POTATOES for the Years 1925 and 1924, and the AVERAGE of the Ten Years, 1916-1925, in each COUNTY of SCOTLAND.

COUNTIES.	BEANS.				POTATOES.					
	Total Produce in 1926.	Yield per acre.		Average of the Ten Years, 1916-1925.	Total Produce in 1926.	Yield per acre.		Average of the Ten Years, 1916-1925.		
		Acres.	Bush.			Acres.	Tons.			
			1926.				1925.		1926.	1925.
Aberdeen	Qrs. 20	11	16.3	Bush. 7.5	Tons. 48,000	Tons. 6.5	Tons. 5.4	6.8		
Argyll	20	4	37.0	33.1	17,000	2,904	5.9	5.2		
Argyll	920	204	35.9	37.0	72,000	8,636	8.3	8.3		
Bang.	80	28	22.0	28.3	10,000	1,725	5.8	5.8		
Berwick.	830	230	30.1	29.2	12,000	2,430	4.9	5.3		
Bute	90	19	36.9	33.0	7,300	1,061	6.9	5.9		
Caithness	..	..	..	..	7,600	1,180	6.4	5.6		
Caithness	910	228	32.0	32.0	1,500	353	4.1	6.2		
Clackmannan.	11	3	30.0	27.1	17,000	2,196	7.6	6.4		
Dumbarton	..	..	..	..	22,000	3,200	7.0	6.6		
Dumfries	360	79	36.3	34.9	53,000	7,931	6.7	7.3		
East Lothian	1,000	250	36.4	38.5	90,000	16,881	5.8	6.1		
Fife	70	14	40.0	36.2	105,000	18,584	5.6	6.9		
Forfar	..	..	..	..	25,000	4,236	4.9	3.8		
Inverness	70	15	35.8	30.4	27,000	4,566	6.1	5.9		
Kinross	..	..	..	..	7,300	1,196	6.1	5.3		
Kirkcubright	11	3	28.0	30.0	8,700	1,297	6.7	6.7		
Kirkcubright	..	..	..	..	35,000	5,290	6.5	7.2		
Leath	60	13	38.0	38.0	47,000	6,813	7.4	7.5		
Mid-Lothian	80	24	28.0	26.8	10,000	1,524	6.7	7.4		
Moray	..	..	..	..	1,500	284	4.5	6.4		
Nairn	..	..	..	..	14,000	2,263	6.0	5.8		
Orkney	..	..	..	..	2,000	306	6.6	4.7		
Peebles	..	..	..	..	102,000	17,424	5.9	4.8		
Perth	2,800	706	32.0	31.9	25,000	3,068	8.3	7.0		
Perth	140	27	42.0	38.9	48,000	7,318	6.5	5.3		
Renfrew.	30	10	20.0	..	5,500	1,142	4.8	6.0		
Ross and Cromarty	120	37	25.8	28.0	840	147	5.7	6.0		
Roxburgh	..	..	..	..	15,000	2,033	7.4	5.3		
Selkirk	..	..	..	..	28,000	3,108	9.1	6.2		
Shetland	5,400	1,355	31.7	29.6	6,600	1,088	6.1	7.9		
Shetland	110	24	35.4	38.3	19,000	2,522	7.6	7.1		
Sutherland	..	..	..	..	9,900	1,552	6.0	5.2		
West Lothian	..	..	..	30.3	9,900	1,552	6.0	8.0		
Wigtown	..	..	..	..	..	..	..	7.2		
Total	13,131	3,290	31.9	31.5	898,940	141,871	6.3	6.5		

* Average of 9 years only. † Average of 8 years only. ‡ Average of 5 years only. § Average of 7 years only. || Crop failure.

TABLE No. 4.—TOTAL PRODUCE OF TURNIPS (including SWEDS) and MANGOLDS, AVERAGE and YIELD per Acre in the Year 1926, compared with the YIELD for the Years 1925 and 1924, and the AVERAGE of the Ten Years, 1916-1925, in each COUNTY of SCOTLAND.

COUNTIES.	TURNIPS AND SWEDS.					MANGOLDS.				
	Total Produce in 1926.	Yield per Acre.			Average of the Ten Years, 1916-1925.	Total Produce in 1926.	Yield per Acre.			Average of the Ten Years, 1916-1925.
		1926.	1925.	1924.			1926.	1925.	1924.	
	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.	Acres.	Tons.	Tons.	Tons.
Aberdeen	1,247,000	79,870	15.6	17.1	15.0	20	1	18.0	..	5.5
Argyll	177,000	4,946	15.6	17.2	15.9	6	6	13.9	16.0	7.4
Barr	186,000	7,204	21.0	17.8	19.2	5,500	283	25.1	20.8	12.5
Barr	332,000	19,595	17.1	14.2	14.0	1,900	110	17.5	15.8	19.6
Berwick	390,000	20,064	18.9	17.5	19.4	..	..	..	..	..
Bute	59,000	1,236	15.6	13.2	14.0	..	..	..	..	16.6
Caithness	208,000	10,900	19.1	18.0	20.8	..	..	..	..	14.8
Clackmannan	11,000	752	14.3	12.7	14.4	..	..	..	..	..
Dumbaron	31,000	1,411	22.0	20.1	16.1	..	9	29.8	24.4	*11.0
Dumfries	802,000	14,861	20.3	19.2	17.8	270	..	20.9	20.0	21.9
Dumfries	258,000	12,585	20.6	18.6	22.7	2,700	191	20.9	20.0	17.4
East Lothian	418,000	20,632	20.3	19.4	17.0	6,100	260	23.4	21.5	19.0
Fife	541,000	29,372	18.4	19.9	17.0	560	29	18.0	14.7	14.6
Forfar	118,000	8,940	12.7	12.7	13.6	290	16	17.6	13.4	16.2
Inverness	343,000	15,010	22.8	21.7	16.7	40	8	13.0	10.3	*13.0
Kincardine	95,000	2,229	15.5	17.3	17.5	..	..	..	..	..
Kirkcubright	157,000	9,288	16.9	16.6	16.1	500	31	16.6	17.1	17.2
Lanark	195,000	9,490	20.3	17.6	19.6	300	16	19.1	18.2	12.5
Mid-Lothian	193,000	9,523	19.3	18.4	16.2	780	32	24.4	20.4	20.3
Moray	215,000	13,386	16.1	16.6	17.7	100	6	17.3	18.9	15.9
Nairn	46,000	3,761	12.4	12.4	13.4	..	..	..	..	*12.7
Orkney	151,000	13,152	11.5	11.4	11.9	..	..	..	..	..
Peebles	55,000	2,797	16.7	17.7	18.3	..	..	..	..	..
Perth	429,000	23,594	18.2	19.0	17.1	..	..	..	20.0	*18.6
Renfrew	37,000	2,029	18.3	16.4	14.4	450	28	16.0	18.3	8.4
Ross and Cromarty	215,000	13,521	15.9	17.0	18.5	160	8	19.4	15.0	19.5
Roxburgh	242,000	16,346	14.8	13.3	16.0	140	10	14.0	16.0	16.2
Selkirk	36,000	2,079	17.2	14.5	15.2	490	40	12.2	11.8	14.1
Shetland	14,000	1,066	14.3	13.4	13.0	15	1	15.3	..	..
Stirling	91,000	3,751	24.2	16.0	11.6	..	..	..	..	..
Sutherland	43,000	2,588	14.1	16.1	19.3	180	6	29.5	20.7	22.4
West Lothian	63,000	5,064	20.4	20.4	14.1	200	8	25.1	25.0	23.2
Wigtown	252,000	13,068	20.8	16.5	20.4	1,800	134	14.3	12.2	18.3
Total	6,893,000	390,778	17.6	17.2	16.6	22,895	1,108	20.7	18.7	18.2

* Average of 6 years only.

* Average of 5 years only

* Crop failed.

* Average of 6 years only.

† Average of 8 years only.

‡ Average of 5 years only

§ Crop failed.

TABLE No. 6.—HAY from Permanent Grass :—TOTAL PRODUCE, ACREAGE, and YIELD PER ACRE, in 1926, in each COUNTY OF SCOTLAND, distinguishing HAY from TIMOTHY MEADOWS and HAY from OTHER MEADOWS.

COUNTIES.	TIMOTHY MEADOWS.			OTHER MEADOWS.		
	Total Produce in 1926.	Acreage in 1926.	Yield per Acre in 1926.	Total Produce in 1926.	Acreage in 1926.	Yield per Acre in 1926.
	Tons.	Acres.	Cwt.	Tons.	Acres.	Cwt.
Aberdeen	30	18	29·9	240	228	21·2
Argyll	920	442	41·7	24,000	14,667	32·8
Ayr	31,000	12,708	48·8	19,000	10,612	36·4
Banff	..	..	..	230	228	20·7
Berwick	260	158	33·2	3,800	2,379	31·6
Bute	30	15	40·0	750	424	35·5
Caithness	..	..	..	390	955	8·2
Clackmannan	1,500	882	35·0	500	831	30·0
Dumbarton	2,900	1,185	49·6	2,300	1,469	30·9
Dumfries	5,000	3,252	31·0	27,000	16,902	31·7
East Lothian	190	66	57·7	2,200	1,162	37·6
Fife	3,700	1,607	45·9	3,800	2,573	29·4
Forfar	600	304	39·2	1,100	940	22·5
Inverness	30	26	25·4	8,600	9,412	18·2
Kincardine	30	9	55·6	640	507	25·2
Kinross	340	172	40·0	1,100	619	35·0
Kirkcudbright	4,200	2,444	34·2	14,000	10,997	24·5
Lanark	19,000	8,980	41·6	7,800	5,952	26·2
Mid-Lothian	1,800	661	51·8	1,900	1,127	33·3
Moray	..	..	..	160	212	15·6
Nairn	..	..	..	7	9	16·0
Orkney	..	..	..	430	580	14·7
Peebles	730	318	45·8	1,400	915	30·6
Perth	7,900	3,702	42·8	10,000	8,842	28·4
Renfrew	12,000	4,676	50·4	3,900	2,213	35·5
Ross and Cromarty	250	202	25·0	2,500	3,132	16·1
Roxburgh	540	276	39·8	11,000	6,383	35·4
Selkirk	250	119	41·7	4,000	1,692	47·4
Shetland	..	..	..	1,900	2,015	18·5
Stirling	16,000	5,774	55·6	3,500	2,507	28·1
Sutherland	..	..	..	1,400	1,550	17·5
West Lothian	1,800	733	48·8	590	898	29·5
Wigtown	1,300	881	29·2	6,800	4,770	28·7
Total	112,300	49,560	45·1	166,937	116,697	28·6

TABLE NO. 7.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN EACH COUNTY OF SCOTLAND AS RETURNED ON 4TH JUNE 1927.

Counties.	Horses (including Ponies).				CATTLE.				SHEEP.				Pigs.						
	Used solely for Agriculture &c.*	Millions, &c.*	Unbroken Horses.		Other Horses.	Cows in Milk.	Cows in Calf, but not in Milk.	Heifers in Calf.	Bulls used for Service.	Other Cattle.		Ewes kept for Breeding.	Rams to be used for Service.	1 Year Old and above.	Under 1 Year.	Kept for Breeding.	Other Pigs.		
			1 Year & above.	Under 1 Year.						1 Year & 2 Years.	Under 1 Year.								
1. Aberdeen	19,686	43	2,930	1,157	2,916	39,032	3,230	2,874	1,723	39,776	49,516	38,868	119,180	3,525	144,534	4,012	332	22,851	
2. Argyll	3,963	14	443	138	512	17,626	2,308	2,069	882	7,987	10,758	13,843	357,182	10,881	262,923	537	69	3,904	
3. Argyll	6,299	26	753	249	1,117	41,766	7,263	10,025	2,379	8,912	18,072	20,263	178,056	4,569	189,109	1,514	132	11,680	
4. Banff	5,780	9	735	849	656	11,301	679	490	5,839	19,955	11,684	96,655	1,068	10,207	41,656	1,241	120	5,978	
5. Barrick	3,482	9	859	81	512	3,139	523	931	288	8,165	8,617	3,419	140,310	3,585	198,657	816	97	3,613	
6. Bute	839	5	140	43	127	2,697	362	524	181	1,028	1,947	2,063	30,432	590	16,905	67	9	666	
7. Caithness	3,874	11	407	157	460	5,993	689	332	162	2,041	5,153	5,641	71,638	2,611	79,401	324	84	1,924	
8. Clackmannan	430	8	73	26	76	1,681	225	100	52	874	760	552	5,907	266	6,109	211	13	782	
9. Dumfriesshire	1,168	15	174	43	173	3,839	1,281	870	293	1,798	1,821	1,970	32,223	949	27,857	157	16	1,048	
10. Dumfries	4,683	9	759	261	883	16,513	2,258	6,140	1,188	9,473	15,264	16,072	257,136	6,335	293,968	1,676	130	9,706	
11. East Lothian	2,674	2	229	60	180	2,277	304	482	165	3,675	2,983	1,612	56,763	1,612	20,811	74,169	874	89	4,215
12. Fife	6,507	15	960	254	325	9,981	1,690	1,821	589	12,678	10,861	7,446	51,232	1,555	12,711	67,885	1,403	171	6,628
13. Forfar	7,313	6	543	130	729	10,521	946	954	420	15,891	11,594	8,015	77,917	2,634	24,995	90,947	1,185	126	6,627
14. Inverness	6,069	33	643	359	528	16,908	2,949	1,215	572	4,316	9,005	12,868	38,147	6,548	85,095	177,406	397	45	2,066
15. Kinross	3,589	2	373	127	499	5,841	473	250	6,066	7,660	5,678	228,586	829	3,792	33,616	640	57	8,530	
16. Kintyre	736	2	175	42	62	1,188	219	201	76	1,034	2,401	1,278	14,588	473	3,234	15,942	136	15	817
17. Kirkcudbright	3,185	22	653	203	470	17,136	1,296	5,580	963	9,806	12,909	11,098	172,704	4,812	50,395	176,621	1,328	136	11,659
18. Lanark	5,547	29	734	212	830	27,213	6,917	5,574	1,523	7,697	10,600	10,660	106,018	9,031	20,190	104,848	1,037	122	6,999
19. Mid-Lothian	2,764	5	263	67	429	7,651	619	227	3,139	2,946	1,658	70,799	1,934	29,156	86,248	1,971	183	13,329	
20. Moray	3,961	19	424	196	450	6,019	465	406	335	3,911	7,164	5,602	22,666	631	6,425	24,157	759	69	4,472
21. Nairn	914	1	155	54	154	1,906	185	145	106	526	1,739	1,914	6,109	265	2,962	5,442	167	17	831
22. Orkney	4,874	11	415	193	813	8,765	1,115	847	228	3,794	9,161	8,848	17,937	745	4,366	22,990	465	63	2,899
23. Peebles	688	5	73	26	84	1,649	221	458	188	1,275	1,862	1,332	93,722	2,218	18,998	94,015	114	14	707
24. Perth	8,899	40	1,173	339	1,003	15,992	2,754	2,135	863	13,613	19,493	16,596	300,126	9,241	82,875	270,347	1,427	161	9,104
25. Renfrew	1,897	15	252	37	390	10,728	2,976	1,766	569	2,046	3,127	3,056	19,401	568	60,811	20,614	475	40	3,469
26. Ross & Cromarty	5,138	8	503	132	473	14,549	1,821	1,756	422	3,966	7,862	3,389	139,526	3,588	80,811	116,664	636	69	3,707
27. Roxburgh	3,003	10	326	69	672	4,520	591	993	340	6,912	6,170	4,237	229,239	3,587	65,376	275,171	668	90	5,310
28. Selkirk	450	1	45	6	70	1,097	141	160	63	663	877	928	86,559	2,903	20,583	85,862	106	7	437
29. Shetland	1,940	47	269	145	2,175	4,559	641	344	75	1,165	2,173	2,573	72,856	2,540	27,580	51,760	10	2	242
30. Stirling	2,884	12	502	134	464	8,653	2,053	1,909	580	7,120	7,553	5,044	57,359	1,457	14,692	55,435	451	47	3,908
31. Sutherland	1,783	2	113	23	166	3,994	661	232	19	732	2,092	2,080	89,721	2,313	49,170	76,331	69	10	570
32. West Lothian	1,447	8	259	71	229	3,966	831	626	222	2,860	1,949	1,525	7,793	191	4,256	10,711	298	38	1,564
33. Wigtown	3,522	27	824	294	534	24,747	1,028	3,171	1,040	7,928	9,157	10,508	59,695	1,828	14,857	61,748	1,454	190	14,604
Total	129,526	466	16,778	5,671	19,661	355,400	49,273	55,584	17,578	208,416	276,817	247,322	3,239,143	90,701	995,005	3,210,628	26,662	2,711	107,240

* Including Mares kept for breeding.

† Above two years old used, or intended to be used, for service.

TABLE NO. 8.—QUANTITY AND VALUE OF CORN, &c., imported into the United Kingdom in the undermentioned Years.

[From Trade and Navigation Returns.]

	Quantities.			Values.		
	1925.	1926.	1927.	1925.	1926.	1927.
	Owt.	Owt.	Owt.	£	£	£
Wheat from—						
United States	26,509,086	31,182,926	35,619,001	18,774,918	20,435,707	21,944,763
Argentine Republic	11,960,128	11,899,216	19,452,492	8,582,526	7,344,119	11,762,631
British East Indies	7,324,150	2,694,687	5,010,319	5,268,819	1,781,066	3,181,644
Australia	16,305,957	9,186,417	14,837,906	11,667,051	6,287,438	9,464,181
Canada	29,677,199	35,669,532	32,181,355	20,429,524	28,327,785	19,655,849
Other countries	5,077,658	5,623,252	3,334,742	3,178,526	3,659,287	2,060,076
Total	96,854,178	96,256,030	110,435,815	67,901,364	62,835,402	68,059,144
Wheat, meal, and flour, from—						
France	63,620	147,380	69,705	50,586	108,544	45,424
United States	2,760,490	2,782,751	2,915,726	2,603,118	2,340,858	2,343,607
Argentine Republic	409,758	793,452	809,892	245,483	397,365	438,997
Australia	1,487,474	1,290,038	1,776,514	1,349,926	1,061,901	1,377,515
Canada	4,212,184	5,384,604	5,124,400	3,884,151	4,707,887	4,175,601
Other countries	179,138	312,851	260,509	123,163	190,447	171,602
Total	9,112,614	10,661,076	10,956,746	8,256,427	8,800,452	8,532,746
Barley	15,779,162	11,570,343	16,502,710	8,532,885	5,188,799	8,930,592
Oats	8,365,700	7,639,787	5,909,035	3,708,905	3,029,786	2,455,682
Peas, not fresh	1,422,274	1,331,825	1,463,204	1,446,366	1,559,638	1,764,042
Beans, not fresh	1,063,231	575,845	880,113	796,444	476,015	536,013
Maize	27,585,433	31,783,768	41,931,751	13,078,083	11,907,776	15,336,892
Maize products	2,888,731	1,666,168	1,890,247	1,411,742	747,737	848,071
Oat products	770,488	772,753	523,460	797,223	777,661	615,046
Rice—						
From United States	168,438	146,557	324,868	277,336	209,927	403,160
From Brit. East Indies . . .	1,855,337	878,613	780,623	1,284,047	617,831	510,534
From other countries	1,235,478	1,377,442	1,431,137	1,180,848	1,258,540	1,109,409
Other kinds of grain	731,456	594,369	590,600	449,104	358,700	343,396
Other products	489,845	392,218	472,927	836,777	435,466	465,975
Malt	45,372	37,549	49,260	54,592	38,887	48,457
Farinaceous substances	1,245,962	963,747	1,196,189	1,177,837	866,677	990,662
Total of corn, &c.	63,646,907	59,730,984	73,846,119	35,032,189	27,470,887	34,358,831

TABLE NO. 9.—RETURN OF THE AVERAGE PRICES OF WOOL in the Years 1926 and 1927.

Years.	Australian.	South African.	English Fleeces.
	Per lb.	Per lb.	Per lb.
	s. d.	s. d.	s. d.
1926	1 8½	1 5½	1 2½ to 1 7
1927	1 7½	1 6½	1 4½ „ 1 8½

TABLE No. 10.—QUANTITIES AND VALUES OF CORN, MEAT, FOOD PRODUCTS, AND ARTICLES AFFECTING AGRICULTURE, imported into the United Kingdom in the Year 1927, with the Corresponding Figures for 1925 and 1926.

[From Trade and Navigation Returns.]

	Quantities.			Values.		
	1925.	1926.	1927.	1925.	1926.	1927.
ANIMALS, LIVING:—	No.	No.	No.	£	£	£
Cattle	800,144	708,868	686,868	15,748,246	13,963,013	11,796,535
Sheep and lambs	400,587	482,216	584,397	1,208,888	1,331,244	1,876,071
Pigs	97,695	231,309	394,740	618,555	1,687,687	2,337,269
Total value	1,298,426	1,422,393	1,616,005	17,575,689	16,981,944	15,509,975
GRAIN, FLOUR, &c.:—	Cwt.	Cwt.	Cwt.	£	£	£
Wheat	96,854,178	96,256,080	110,435,815	67,001,364	62,385,402	68,059,144
Wheat meal and flour . .	9,112,614	10,661,076	10,956,746	8,256,427	8,806,452	8,552,746
Barley	15,779,162	11,570,343	16,502,710	8,532,885	5,188,799	8,980,592
Oats	8,305,700	7,639,787	5,909,085	3,708,905	3,029,798	2,455,682
Peas, not fresh	1,422,274	1,331,825	1,463,204	1,446,366	1,559,693	1,764,042
Beans, not fresh	1,063,281	575,845	830,113	796,444	476,015	636,913
Maize or Indian corn . .	27,585,433	31,783,768	41,931,751	13,078,083	11,907,776	15,336,892
Maize products	2,888,731	1,606,168	1,890,247	1,411,742	747,737	848,071
Oat products	770,488	772,758	523,460	797,223	777,561	615,046
All other products . . .	489,845	392,218	472,927	836,777	435,466	465,975
Malt	45,372	37,549	49,260	54,592	38,887	48,467
Rice—						
From United States . .	168,438	146,557	324,363	277,330	209,927	403,160
From British East Indies	1,855,337	878,613	730,623	1,284,047	617,831	510,534
From other countries . .	1,235,478	1,377,442	1,481,137	1,180,848	1,258,540	1,109,409
Other kinds of grain . .	731,456	594,369	590,600	449,104	356,700	343,396
Farinaceous substances not elsewhere specified	1,245,962	963,747	1,196,189	1,177,887	806,877	990,662
Total value	169,613,699	166,648,090	195,238,680	111,189,980	99,112,741	110,970,721
MEAT:—	Cwt.	Cwt.	Cwt.	£	£	£
Beef, salted	18,390	8,038	8,313	71,925	44,105	34,880
*Beef	12,399,133	13,304,413	13,435,937	30,877,607	30,770,312	29,527,782
*Mutton	5,474,352	5,363,650	5,536,398	22,430,933	17,776,706	17,540,165
Bacon	7,436,164	7,471,278	8,469,131	42,232,926	42,687,759	38,622,481
Hams	1,516,748	1,195,189	902,536	8,541,793	7,459,199	4,709,854
Pork, salted (net bacon or hams)	36,497	29,616	47,020	104,497	79,275	94,001
*Pork	1,238,078	912,113	504,572	6,143,123	4,488,806	2,166,112
Tinned, canned extracts, including tongue	1,508,816	1,316,799	1,256,777	6,868,769	6,214,218	6,439,616
All other kinds	527,544	425,980	269,213	1,746,835	1,345,389	596,010
*Rabbits (dead)	290,697	266,712	260,151	815,904	768,859	752,232
Total of dead meat . .	30,496,419	30,293,768	30,690,548	119,824,352	111,634,628	100,483,133
DAIRY PRODUCTS:—	Cwt.	Cwt.	Cwt.	£	£	£
Butter	5,853,245	5,818,840	5,826,865	53,304,417	48,288,312	48,371,688
Margarine	1,386,881	1,333,454	1,186,225	4,878,434	4,687,614	4,045,198
Cheese	3,098,702	3,014,055	2,949,148	15,696,800	13,940,648	13,493,929
Total	10,338,828	10,166,349	9,961,238	73,779,651	66,911,474	65,810,805

* Fresh, Chilled, and Frozen.

TABLE No. 10—Continued.

	Quantities.			Values.		
	1925.	1926.	1927.	1925.	1926.	1927.
				£	£	£
POULTRY (alive or dead)	..	..	..	2,441,093	2,537,870	2,979,485
GAME (alive or dead)	..	..	..	123,251	94,968	94,638
Eggs in Shell	Gt. Hunds. 21,865,116	Gt. Hunds. 22,125,395	Gt. Hunds. 24,347,528	16,584,898	15,369,434	15,918,925
Eggs not in Shell	Cwt. 615,242	Cwt. 717,724	Cwt. 692,869	3,327,003	3,584,138	3,408,237
Total value	..	..	..	22,476,295	21,586,410	22,401,280
FRUIT, VEGETABLES, &c. :—	Cwt.	Cwt.	Cwt.	£	£	£
Apples	5,989,674	8,284,160	6,161,414	7,541,961	9,561,229	7,272,346
Cherries	138,513	194,775	124,909	342,927	431,147	275,614
Plums	507,414	434,742	597,821	957,145	828,410	1,079,638
Pears	589,026	1,429,283	1,077,614	1,267,409	2,060,560	1,460,067
Grapes	978,910	566,357	716,932	2,177,282	1,622,781	1,980,059
Oranges	7,728,601	7,973,275	7,905,642	8,097,289	7,664,466	8,703,847
Lemons, Limes, &c.	1,293,843	1,316,277	1,235,163	1,094,498	1,102,208	1,177,794
Unenumerated	884,798	996,502	1,158,981	1,595,590	1,851,237	2,176,444
Bananas	Bunches. 12,030,628	Bunches. 18,546,084	Bunches. 12,702,268	5,859,639	6,047,562	5,756,374
Onions	Bushels. 10,462,118	Bushels. 10,214,621	Bushels. 9,895,394	2,429,181	2,042,115	2,071,504
Potatoes	Cwt. 9,838,724	Cwt. 6,776,232	Cwt. 5,830,791	4,722,947	3,646,491	3,989,929
Tomatoes	2,478,278	2,301,984	2,380,197	4,137,444	4,065,750	4,259,869
Vegetables, unenumerated } (raw) }	..	..	..	1,227,700	1,519,009	1,511,028
Hops	73,466	..	..	567,384	..	..
Total value	..	..	..	42,018,396	42,442,965	41,614,013
OTHER ARTICLES :—	Tons.	Tons.	Tons.	£	£	£
Lard	114,205	119,710	119,802	9,550,024	8,615,611	7,582,023
Wool—sheep and lambs'	Centals. 7,268,591	Centals. 8,114,409	Centals. 8,225,460	71,797,203	62,586,374	59,796,552
Wood and timber—	Loads.	Loads.	Loads.			
Hewn (pit-props or pit-wood) }	1,582,447	1,582,444	2,364,493	4,594,554	2,987,574	5,457,824
Sawn soft	4,992,904	4,771,058	6,025,845	24,292,742	21,914,630	28,247,005
Staves	115,964	106,118	104,159	917,609	863,756	739,871
Oilseed-cake (not sweetened)	Tons. 467,360	Tons. 507,581	Tons. 497,752	4,428,693	3,851,526	3,944,131
Seeds—	Cwt.	Cwt.	Cwt.			
Clover and grass	271,657	318,217	324,126	713,517	966,008	981,207
Cotton	Tons. 605,891	Tons. 539,745	Tons. 530,846	6,494,896	4,820,374	4,919,074
Flax or linseed	340,476	360,843	352,503	7,268,461	5,688,344	5,600,168
Rape	36,800	16,208	8,393	759,021	305,858	164,659
Soya beans	160,997	45,958	83,121	2,041,004	534,207	929,735
Bones (whether burnt or not)	8,521	4,073	4,475	64,649	30,629	34,819
Guano	10,500	18,286	10,427	65,147	162,957	82,737
Basic slag	25,119	46,211	79,346	65,420	124,366	195,736
Superphosphates	105,155	135,911	167,880	286,480	357,791	414,040
Phosphate of lime and rock } phosphate }	338,403	292,254	401,996	458,721	422,906	574,135
Nitrate of soda (sodic nitre)	Cwt. 1,626,488	Cwt. 789,020	Cwt. 1,570,301	1,020,854	491,176	945,092
Cotton, raw	Centals. 18,941,929	Centals. 17,402,820	Centals. 15,475,544	123,719,997	82,816,596	65,985,783
Hemp	Tons. 100,349	Tons. 84,574	Tons. 101,701	4,705,040	3,516,452	4,190,855
Flax	84,324	43,154	47,700	4,173,395	3,573,198	3,603,264
Hides untanned—	Cwt.	Cwt.	Cwt.			
Dry	667,586	525,365	719,935	3,056,132	2,288,484	3,309,458
Wet	1,186,529	1,006,667	810,566	4,475,846	3,561,238	3,092,981
Petroleum	Gallons. 1,044,219,196	Gallons. 1,375,658,465	Gallons. 1,886,506,145	80,647,921	38,612,079	33,691,002

TABLE NO. 11.—QUANTITY AND VALUE OF DEAD MEAT imported into the United Kingdom in the undermentioned Years.

	Quantities.			Values.		
	1925.	1926.	1927.	1925.	1926.	1927.
	Cwt.	Cwt.	Cwt.	£	£	£
BACON, from—						
Denmark	3,738,834	3,641,578	5,081,610	22,160,384	21,676,823	23,311,800
United States	1,489,938	1,189,247	641,076	7,469,871	6,334,062	2,827,487
Irish Free State	461,548	484,117	450,885	2,924,601	2,765,610	2,384,823
Canada	1,266,861	869,879	503,084	6,848,787	5,009,148	2,288,060
Other countries	538,988	1,386,457	1,792,476	2,384,583	6,902,121	7,909,421
Total	7,486,164	7,471,278	8,469,131	42,232,926	42,687,759	38,622,481
BEEF (salted), from—						
United States	13,618	6,829	5,058	58,795	40,165	27,442
Other countries	4,772	1,209	3,255	13,180	3,940	7,438
Total	18,390	8,038	8,313	71,925	44,105	34,880
BEEF (fresh and refrigerated)—						
Denmark	30,680	24,988	..	158,606	131,084	..
United States	94,793	84,822	78,020	288,641	319,212	321,161
Uruguay	994,412	961,237	588,348	2,393,846	2,146,929	1,310,122
Argentine Republic	9,088,599	10,404,988	11,568,322	23,241,529	24,454,515	25,379,100
Australia	1,369,950	1,148,978	642,743	2,944,152	2,329,102	1,299,486
New Zealand	523,368	540,628	330,862	1,057,898	1,043,928	640,735
Other countries	347,831	138,672	237,642	792,935	845,542	577,189
Total	12,399,133	13,304,418	13,435,937	30,877,607	30,770,812	29,627,782
HAMS, from—						
United States	1,309,408	1,000,362	716,104	7,323,280	6,211,585	3,713,803
Canada	188,499	162,716	133,703	1,083,227	1,048,840	715,216
Other countries	18,841	32,111	52,720	180,286	198,774	275,835
Total	1,516,748	1,195,189	902,526	8,541,793	7,459,199	4,709,854
TINNED, CANNED EXTRACTS (including TONGUE)—						
Beef	1,323,084	1,116,793	1,040,502	5,840,948	5,141,302	5,035,135
Mutton	23,629	40,343	50,709	85,078	132,222	203,558
Pork	76,688	73,634	104,858	664,642	642,382	1,011,740
„ Other descriptions	85,415	86,029	60,708	268,191	248,312	189,188
Total	1,508,816	1,316,799	1,256,777	6,858,759	6,214,218	6,439,616
ALL OTHER KINDS—						
Tinned or Canned	3,274	7,385	9,378	21,896	35,091	53,764
Salted	1,690	755	853	4,543	2,254	1,810
Other descriptions	522,580	417,840	258,982	1,720,396	1,308,044	540,416
Total	527,544	425,980	269,213	1,746,835	1,345,389	596,010
MUTTON (fresh and refrigerated)—						
Netherlands	120,137	83,221	..	610,728	171,477	..
Uruguay	118,590	318,369	317,252	402,786	833,462	811,274
Argentine Republic	1,841,553	1,269,543	1,536,483	6,755,877	3,633,362	4,235,364
Australia	526,851	750,874	627,968	2,403,416	2,321,889	1,969,400
New Zealand	2,501,929	2,680,992	2,737,318	11,037,819	9,829,979	9,664,346
Other countries	865,862	315,651	317,877	1,220,857	776,537	859,781
Total	5,474,352	5,368,650	5,536,898	22,430,983	17,776,706	17,540,165
PORK (salted, not Bacon or Hams), from—						
Denmark	16,313	17,442	32,982	23,586	21,911	39,282
United States	15,732	8,652	10,842	64,848	42,860	46,440
Other countries	4,452	3,522	3,196	16,563	14,504	8,279
Total	36,497	29,616	47,020	104,497	79,275	94,001
PORK (fresh and refrigerated)—						
Netherlands	819,843	381,580	..	4,122,182	1,875,565	..
Irish Free State	179,731	202,584	317,339	932,933	1,034,848	1,847,811
China	19,423	11,676	659	74,450	85,614	2,370
Argentine Republic	7,819	86,052	44,058	34,832	871,625	201,768
United States	130,183	90,490	38,752	631,122	515,332	202,109
Other countries	81,579	189,781	108,164	847,599	655,822	412,064
Total	1,238,078	912,113	504,572	6,148,123	4,488,806	2,166,112
RABBITS (dead), from—						
Belgium	25,713	33,847	36,701	119,656	172,000	186,846
Irish Free State	58,293	33,851	23,439	174,214	101,091	84,875
Australia	184,892	180,237	176,933	462,788	483,063	419,798
New Zealand	11,512	12,481	6,279	34,389	31,568	15,862
Other countries	6,287	6,846	11,749	28,857	26,147	44,853
Total	290,697	266,712	260,151	815,904	768,859	752,232
Total of dead meat	30,496,419	30,298,788	30,690,548	119,824,852	111,634,628	100,483,133

TABLE NO. 12.—QUANTITIES AND VALUES OF BUTTER, MARGARINE, CHEESE, AND Eggs imported into the United Kingdom in each Year from 1925 to 1927 inclusive.

[From Trade and Navigation Returns.]

	Quantities.			Values.		
	1925.	1926.	1927.	1925.	1926.	1927.
BUTTER from—	Cwt.	Cwt.	Cwt.	£	£	£
Russia . . .	292,226	262,291	350,422	2,448,095	1,924,185	2,595,180
Finland . . .	169,696	186,591	205,177	1,611,065	1,556,870	1,687,345
Sweden . . .	81,436	154,072	165,951	813,823	1,327,190	1,415,620
Denmark . . .	1,658,052	1,906,495	1,994,764	17,110,534	17,166,480	17,646,132
Netherlands . .	76,034	150,442	170,235	719,203	1,330,281	1,407,246
France . . .	30,996	29,971	65,994	291,432	239,149	515,121
United States . .	11,843	4,654	672	110,372	36,350	5,818
Argentine Republic . .	484,503	514,197	420,058	4,030,324	3,862,998	3,301,769
Irish Free State . .	403,111	496,245	586,485	3,696,144	3,835,067	4,560,157
Australia . . .	1,161,238	752,038	488,721	9,484,977	5,759,695	3,836,345
New Zealand . . .	1,255,439	1,153,896	1,260,729	10,788,865	9,607,459	10,387,206
Canada . . .	162,523	63,609	423	1,518,167	502,811	3,613
Other countries . .	66,148	144,289	117,234	581,416	1,134,777	910,131
Total . . .	5,853,245	5,818,840	5,826,865	53,204,417	48,283,312	48,271,683
MARGARINE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands . . .	1,313,924	1,273,217	1,159,163	4,642,529	4,490,634	3,954,108
France . . .	6,080	5,943	4,083	22,994	22,271	14,542
Irish Free State . .	61,823	49,552	16,515	194,943	158,036	59,806
Other countries . .	5,054	4,742	5,464	17,968	16,573	16,687
Total . . .	1,386,881	1,333,454	1,185,225	4,878,434	4,687,514	4,045,193
CHEESE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands . . .	141,948	199,991	228,066	638,870	849,279	1,003,390
Italy . . .	161,154	141,218	141,446	802,062	679,812	657,805
United States . . .	17,885	13,199	17,189	101,076	62,112	77,193
Australia . . .	80,852	46,985	35,493	393,536	224,290	155,850
New Zealand . . .	1,391,500	1,496,901	1,611,869	6,726,780	7,053,025	7,173,947
Canada . . .	1,252,894	1,056,729	843,943	6,719,559	4,657,201	4,007,275
Other countries . .	52,469	69,032	71,142	314,917	414,929	418,469
Total . . .	3,098,702	3,014,055	2,949,148	15,696,800	13,940,648	13,493,924
EGGS from—	Great Hundreds.	Great Hundreds.	Great Hundreds.	£	£	£
Lithuania . . .	211,721	79,638	11,445	122,144	45,988	6,192
Denmark . . .	5,836,491	5,625,380	5,679,640	5,491,744	4,680,503	4,592,587
Poland (including Dantzig) . .	1,067,720	2,721,512	3,387,956	634,039	1,370,652	1,547,506
Netherlands . . .	1,691,631	1,935,416	2,359,895	1,409,647	1,595,902	1,711,810
France . . .	231,039	588,711	429,509	155,208	367,411	320,958
Italy . . .	525,354	203,221	87,407	451,685	173,911	74,512
Serb-Croat-Slovene State . .	75,097	3,516	1,100	45,947	3,044	1,128
Egypt . . .	1,162,066	672,167	668,544	547,028	293,141	290,609
China . . .	1,000,837	1,232,305	688,183	600,229	685,804	399,835
United States . . .	88,084	60,879	92,880	75,949	43,948	64,556
Canada . . .	244,537	156,350	41,367	216,519	133,878	37,401
Irish Free State . .	4,566,578	4,427,769	5,051,523	3,298,460	2,879,192	3,126,638
Other countries . .	5,163,961	4,368,531	5,848,074	3,536,299	3,096,060	3,745,193
Total . . .	21,865,116	22,125,395	24,347,523	16,584,898	15,369,434	15,918,925

TABLE NO. 13.—NUMBER AND VALUE OF LIVE CATTLE, SHEEP, AND PIGS imported into the United Kingdom in the undermentioned Years. [*From Trade and Navigation Returns.*]

	Number.			Value.		
	1925.	1926.	1927.	1925.	1926.	1927.
CATTLE, from—				£	£	£
Irish Free State . . .	688,120	628,918	629,001	12,780,984	11,875,494	11,580,104
Canada	110,155	79,083	7,629	2,959,149	2,064,053	211,085
United States . . .	1,684	688	..	51,118	18,991	..
Other countries . . .	235	179	198	7,050	4,535	5,846
Total	800,144	708,868	636,828	15,748,246	13,968,013	11,796,535
SHEEP AND LAMBS, from—						
Irish Free State . . .	400,587	482,216	584,897	1,208,888	1,831,244	1,876,071
Other countries . . .	..	..	..	..	..	..
Total	400,587	482,216	584,897	1,208,888	1,831,244	1,876,071
PIGS from—						
Irish Free State . . .	97,695	229,939	394,740	618,555	1,678,407	2,337,369
Other countries . . .	..	1,870	..	..	9,280	..
	97,695	231,809	394,740	618,555	1,687,687	2,337,369

TABLE NO. 14.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS imported into Great Britain from Ireland in each of the Years 1921-1927.

	1921.	1922.	1923.	1924.	1925.	1926.	1927.
†HORSES :—							
Stallions	268	347	444	400	396	411	457
Mares	11,316	11,445	11,487	12,760	7,856	5,209	4,655
Geldings	9,873	11,558	11,474	18,060	7,566	5,954	5,855
Total	21,452	23,345	23,405	26,220	15,318	11,574	10,967
CATTLE: Oxen, Bulls, and Cows :—							
Fat	376,138	420,808	283,666	245,167	246,829	287,934	284,498
Store	318,141	480,697	459,508	629,016	456,354	393,161	348,723
Other cattle	34,010	46,295	43,236	62,970	40,986	46,607	55,679
Calves	39,201	30,955	26,315	40,553	36,573	22,742	25,892
Total	767,490	978,255	812,720	1,077,706	780,692	720,444	712,792
SHEEP :—							
Sheep	243,651	337,082	156,970	277,848	167,789	216,502	273,383
Lambs	337,610	877,731	292,182	363,746	268,653	306,860	367,660
Total	581,261	714,763	449,152	641,594	436,442	523,362	641,043
PIGS :—							
Fat	62,794	128,504	314,816	179,611	55,883	185,565	338,961
Store	3,056	205	3,435	6,889	2,368	1,698	4,371
Total	65,850	128,709	318,241	186,000	58,246	187,263	343,332

† Not including Army Horses.

EDINBURGH CORN MARKET.

STATEMENT SHOWING THE PRICES OF WHEAT, BARLEY, AND OATS FOR THE YEAR 1927.

The offering of grain by farmers and others in the area of the Market was not resumed during the year except for the exposure of a few samples of Wheat and Oats at intervals. It is hoped that advantage will be taken of the privilege afforded to farmers and merchants of offering grain in the open market, as undoubtedly it enables them to secure the market value, and gives a desirable indication of the true value of the various grains.

The Corn Sales Act of 1921 provides that all sales are to be effected by weight only, and expressed in terms of or by reference to the hundredweight of 112 lb. Experience has proved it to be convenient to quote at a price per 4½ cwt. for Wheat, 4 cwt. for Barley, and 3 cwt. for Oats.

The following statement gives a record of the year's proceedings in Edinburgh Corn Market.

1927.		WHEAT, per 4½ cwt.				BARLEY, per 4 cwt.				OATS, per 3 cwt.			
		Highest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.	
		s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January	5	54	0	53	6	42	0	30	0	24	0	22	6
"	12	54	0	52	6	44	0	32	0	24	0	23	3
"	19	54	0	53	0	44	0	31	0	23	9	22	0
"	26	54	0	53	0	44	0	32	0	23	6	21	6
February	2	54	0	53	6	46	0	32	0	23	6	21	9
"	9	54	0	53	6	45	0	32	0	23	3	21	6
"	16	53	6	53	0	44	0	32	0	23	3	21	6
"	23	53	0	52	0	42	0	30	0	23	3	21	9
March	2	53	6	52	0	43	0	30	0	23	6	22	3
"	9	52	6	52	0	42	0	30	0	23	6	22	3
"	16	52	6	52	0	42	0	30	0	24	0	22	9
"	23	52	0	51	0	42	0	30	0	24	0	22	9
"	30	52	0	51	0	43	0	33	0	24	3	23	0
April	6	52	6	52	0	44	0	34	0	24	3	23	0
"	13	53	0	52	0	44	0	34	0	25	0	23	6
"	20	53	0	52	0	45	0	40	0	25	6	23	9
"	27	53	6	53	0	45	0	40	0	26	3	25	6
May	4	54	0	53	0	46	6	45	0	27	3	26	0
"	11	55	0	54	0	47	0	36	0	28	6	27	6
"	18	55	0	54	0	47	0	36	0	30	0	29	0
"	25	56	6	56	0	46	0	44	0	30	0	28	6
June	1	56	6	55	6	46	0	44	0	29	6	28	6
"	8	56	6	55	0	46	0	44	0	29	6	28	0
"	15	56	6	55	6	46	0	44	0	30	0	28	9
"	22	56	0	55	0	46	0	44	0	30	6	29	3
"	29	55	6	54	6	46	0	44	0	31	6	30	0
July	6	55	6	54	6	..	..	..	..	31	6	29	6
"	13	56	0	55	0	..	..	..	..	31	6	30	0
"	20	55	6	54	6	..	..	..	..	31	6	30	0
"	27	55	6	54	6	..	..	..	..	31	6	30	0
August	3	56	0	55	0	..	..	..	..	31	6	30	0
"	10	57	0	56	0	..	..	..	..	32	0	30	6
"	17	56	0	55	0	..	..	..	..	32	0	30	0
"	24	56	0	55	6	..	..	..	..	32	0	30	0
"	31	..	..	..	..	..	..	..	..	32	0	30	0
September	7	55	0	54	0	55	0	53	0	31	6	30	0
"	14	55	0	54	0	56	0	45	0	31	6	27	0
"	21	54	0	46	0	56	0	45	0	31	6	24	0
"	28	54	0	43	0	56	0	45	0	32	0	27	3
October	5	45	0	43	0	53	0	40	0	29	6	27	6
"	12	45	0	43	0	56	0	38	0	30	0	28	0
"	19	42	0	40	0	54	0	30	0	30	0	24	0
"	26	45	0	34	0	56	0	30	0	21	0	25	0
November	2	42	0	34	0	54	0	30	0	31	6	24	0
"	9	45	0	35	0	54	0	30	0	31	6	24	0
"	16	46	0	40	0	54	6	30	0	31	6	24	0
"	23	46	0	35	0	55	0	30	0	31	0	24	0
"	30	46	0	33	6	52	0	30	0	30	6	24	0
December	7	47	0	35	0	55	0	32	0	30	0	24	0
"	14	46	6	38	0	56	0	32	0	30	0	24	0
"	21	47	0	38	0	54	0	34	0	30	6	24	0
"	28	47	0	40	0	54	0	36	0	30	0	24	0

PRICES OF SHEEP SINCE 1818.

TABLE NO. 1.—CHEVIOT SHEEP.

Year.	Wethers.		Ewes.		Lambs.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1818	28 0	to 80 0	not quoted.		8 0	to 10 0
1819	25 0	" 27 0	15 0	to 17 0	10 6	" 12 0
1820	20 0	" 25 0	16 0	" 17 0	10 0	" 11 0
1821	18 0	" 20 0	14 0	" 16 0	7 6	" 8 0
1822	12 6	" 13 0	8 0	" 8 6	4 6	" 0 0
1823	13 6	" 18 0	7 0	" 10 6	5 6	" 6 0
1824	14 0	" 19 0	7 0	" 9 0	4 6	" 6 0
1825	29 0	" 32 0	15 0	" 19 0	9 0	" 10 6
1826	17 6	" 21 6	13 0	" 15 0	7 0	" 7 6
1827	15 0	" 24 0	not quoted.		7 0	" 8 0
1828	18 0	" 27 6	12 0	to 15 0	7 0	" 8 3
1829	18 0	" 24 0	12 6	" 14 0	7 0	" 8 6
1830	15 0	" 21 0	8 0	" 11 0	6 0	" 6 9
1831	18 0	" 25 0	9 0	" 13 0	7 0	" 8 0
1832	19 0	" 24 0	11 0	" 16 0	7 0	" 9 0
1833	22 0	" 31 0	13 6	" 20 0	8 0	" 11 3
1834	22 0	" 31 0	13 6	" 21 0	9 0	" 11 6
1835	22 0	" 27 6	18 0	" 20 6	8 0	" 11 0
1836	24 0	" 31 6	16 0	" 19 0	10 0	" 14 0
1837	19 0	" 28 0	14 0	" 19 0	10 0	" 13 0
1838	23 0	" 30 6	17 0	" 22 0	12 0	" 14 0
1839	23 0	" 31 0	14 0	" 19 0	0 0	" 13 0
1840	24 0	" 33 0	15 0	" 23 0	7 0	" 11 6
1841	23 0	" 30 0	14 0	" 22 0	8 0	" 12 0
1842	22 6	" 28 0	13 0	" 17 0	7 6	" 10 0
1843	19 0	" 25 0	8 0	" 12 0	5 0	" 8 0
1844	21 0	" 29 0	10 0	" 16 0	8 0	" 10 6
1845	23 0	" 33 0	13 0	" 20 0	8 0	" 13 0
1846	24 0	" 33 6	14 6	" 21 6	10 0	" 14 6
1847	24 0	" 35 0	13 0	" 24 0	11 6	" 15 0
1848	23 0	" 34 6	13 0	" 28 0	11 6	" 15 0
1849	21 0	" 30 2	12 0	" 21 0	0 0	" 14 0
1850	20 6	" 29 6	12 0	" 20 0	8 0	" 13 0
1851	21 6	" 31 0	13 0	" 21 0	8 9	" 14 0
1852	21 0	" 32 0	15 0	" 23 0	8 0	" 14 0
1853	26 6	" 38 0	17 0	" 28 6	9 0	" 17 0
1854	25 0	" 36 0	17 0	" 26 0	9 0	" 16 6
1855	23 6	" 36 0	16 0	" 25 0	10 0	" 17 0
1856	22 0	" 35 6	15 6	" 24 0	10 0	" 15 0
1857	24 0	" 36 0	14 6	" 26 0	10 6	" 14 6
1858	24 0	" 34 6	14 0	" 24 6	10 6	" 14 0
1859	25 0	" 34 6	16 0	" 25 0	10 3	" 14 9
1860	26 0	" 38 0	17 6	" 27 6	12 6	" 17 6
1861	25 0	" 38 6	16 0	" 28 0	9 0	" 16 0
1862	27 0	" 37 6	17 6	" 28 0	10 0	" 16 0
1863	25 0	" 38 6	19 0	" 28 6	10 6	" 16 0
1864	31 0	" 41 0	21 0	" 31 6	14 0	" 18 0
1865	32 6	" 44 0	22 6	" 33 6	14 6	" 20 0
1866	37 0	" 50 0	29 0	" 42 6	15 0	" 26 0
1867	26 0	" 58 0	18 0	" 25 6	12 0	" 16 0
1868	30 0	" 32 0	15 6	" 21 0	7 6	" 13 0
1869	28 0	" 38 0	15 0	" 22 6	7 6	" 14 0
1870	35 6	" 43 0	18 0	" 28 0	10 0	" 17 0
1871	36 6	" 49 0	22 0	" 33 6	14 0	" 20 0
1872	45 0	" 56 0	32 0	" 42 0	16 0	" 22 0
1873	42 0	" 51 0	25 0	" 42 0	15 6	" 22 0
1874	53 6	" 44 6	21 0	" 36 0	12 0	" 17 0
1875	33 0	" 43 6	21 0	" 34 0	13 6	" 23 6
1876	40 0	" 52 6	23 0	" 30 0	13 6	" 25 0
1877	41 0	" 51 0	25 0	" 37 0	15 0	" 24 0
1878	35 6	" 48 0	23 6	" 35 0	14 0	" 22 0
1879	34 0	" 44 0	21 0	" 34 0	14 0	" 20 0

TABLE No. 1.—CHEVIOT SHEEP—*Continued.*

Year.	Wethers.				Ewes.				Lambs.						
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.			
1880	30	0	to	43	6	20	0	to	30	0	12	6	to	20	0
1881	32	0	"	45	6	29	0	"	34	0	14	0	"	20	0
1882	40	0	"	51	0	30	0	"	40	0	14	0	"	20	6
1883	44	0	"	55	6	34	6	"	46	6	15	6	"	23	0
1884	36	0	"	47	6	29	6	"	41	6	12	6	"	20	0
1885	30	0	"	38	0	24	0	"	31	0	12	0	"	18	0
1886	32	0	"	40	0	21	0	"	29	0	12	6	"	19	0
1887	29	0	"	36	0	18	0	"	26	0	11	0	"	16	6
1888	30	0	"	38	0	19	0	"	27	0	12	0	"	17	6
1889	36	0	"	44	0	24	0	"	32	0	14	0	"	22	0
1890	31	0	"	40	0	22	0	"	30	0	12	6	"	20	0
1891	27	0	"	38	0	16	0	"	25	0	9	0	"	16	0
1892	22	0	"	30	6	13	0	"	22	0	5	0	"	11	0
1893	26	0	"	35	6	18	0	"	28	6	8	6	"	15	0
1894	26	0	"	37	0	20	0	"	31	0	10	6	"	18	6
1895	28	0	"	39	0	22	0	"	34	0	11	6	"	19	6
1896	24	6	"	34	0	19	0	"	30	6	9	0	"	16	6
1897	27	0	"	36	0	21	0	"	31	6	11	0	"	17	6
1898	27	0	"	37	0	22	0	"	32	6	12	0	"	18	6
1899	24	0	"	33	0	20	0	"	30	6	10	6	"	16	0
1900	26	0	"	36	0	22	0	"	32	6	12	0	"	17	0
1901	25	0	"	32	6	20	0	"	29	6	11	0	"	16	0
1902	24	0	"	31	6	18	0	"	27	0	9	6	"	14	6
1903	26	0	"	34	0	21	0	"	31	0	11	4	"	18	0
1904	28	6	"	36	0	23	0	"	32	6	13	0	"	20	0
1905	27	6	"	35	0	23	0	"	33	0	14	0	"	21	0
1906	30	0	"	38	0	26	0	"	34	6	15	0	"	23	0
1907	28	0	"	34	0	22	0	"	30	6	13	6	"	19	6
1908	26	0	"	32	6	21	0	"	27	6	11	6	"	17	0
1909	24	0	"	31	0	18	0	"	25	6	9	6	"	16	0
1910	27	0	"	35	0	22	0	"	31	0	12	0	"	20	0
1911	24	0	"	31	6	18	6	"	27	6	10	6	"	18	0
1912	26	0	"	34	6	22	0	"	31	0	13	0	"	21	0
1913	30	0	"	39	0	24	0	"	35	6	16	0	"	24	0
1914	32	6	"	41	0	28	0	"	39	0	18	0	"	27	6
1915	36	0	"	46	0	31	0	"	44	0	20	0	"	30	6
1916	40	6	"	51	0	34	0	"	49	0	22	0	"	34	6
1917	43	6	"	56	0	38	0	"	56	0	24	0	"	34	0
1918	50	0	"	66	0	42	0	"	61	0	25	0	"	37	0
1919	53	0	"	69	0	44	6	"	67	0	28	0	"	40	6
1920	56	0	"	91	0	48	0	"	79	0	34	0	"	49	0
1921	45	0	"	60	0	52	3	"	85	9	33	9	"	52	3
1922	40	0	"	56	0	56	0	"	90	6	27	0	"	50	0
1923	44	0	"	65	0	61	0	"	106	0	30	0	"	62	0
1924	41	0	"	61	0	60	0	"	100	0	Ewe lambs—				
											40 0 to 85 6				
											Wether lambs—				
											81 6 to 58 0				
1925	39	3	"	50	0	56	0	"	88	9	Ewe lambs—				
											36 0 to 82 0				
											Wether lambs—				
											22 3 to 50 6				
1926	35	0	"	49	3	34	6	"	64	6	Ewe lambs—				
											28 6 to 66 6				
											Wether lambs—				
											26 3 to 42 0				
1927	28	9	"	46	3	32	6	"	55	6	Ewe lambs—				
											25 3 to 52 0				
											Wether lambs—				
											23 3 to 39 0				

TABLE NO. 2.—BLACKFACE SHEEP.

Year.	Wethers.		Ewes.		Lambs.	
	s.	d.	s.	d.	s.	d.
1819	22	0 to 24	12	0 to 15	8	0 to 9
1820	20	0 " 23	15	6 " 17	7	0 " 8
1821	18	0 " 20	12	0 " 18	6	0 " 7
1822	11	6 " 18	5	6 " 6	4	6 " 0
1823	12	0 " 16	5	0 " 6	4	0 " 5
1824	9	6 " 18	6	0 " 7	4	0 " 5
1825	22	0 " 26	11	0 " 18	6	0 " 9
1826	15	0 " 17	8	0 " 9	4	6 " 6
1827	14	0 " 18	7	0 " 10	6	0 " 7
1828	16	0 " 20	8	0 " 11	5	0 " 7
1829	14	0 " 18	9	0 " 10	6	0 " 7
1830	9	6 " 18	4	0 " 6	4	6 " 6
1831	18	0 " 17	5	0 " 7	5	0 " 6
1832	14	0 " 18	7	0 " 11	6	0 " 7
1833	16	0 " 24	7	6 " 12	6	6 " 9
1834	16	0 " 22	10	0 " 13	6	0 " 8
1835	15	0 " 18	10	0 " 18	7	0 " 8
1836	15	0 " 21	9	0 " 12	8	6 " 11
1837	13	0 " 16	8	0 " 12	8	0 " 9
1838	15	0 " 20	10	0 " 18	not quoted.	
1839	15	0 " 22	10	0 " 12	7	0 to 8
1840	15	0 " 22	11	0 " 12	7	0 " 9
1841	16	0 " 20	9	0 " 11	6	0 " 8
1842	14	0 " 19	7	6 " 8	5	6 " 7
1843	not quoted.		4	9 " 6	not quoted.	
1844	15	0 to 21	6	6 " 10	5	0 to 8
1845	14	0 " 23	8	0 " 12	6	0 " 8
1846	13	0 " 24	10	0 " 13	8	0 " 9
1847	20	6 " 25	10	0 " 14	8	6 " 9
1848	20	0 " 24	11	3 " 12	8	6 " 10
1849	not quoted.		not quoted.		7	0 " 7
1850	not quoted.		not quoted.		7	0 " 0
1851	17	6 to 23	9	0 to 12	6	6 " 8
1852	18	6 " 22	9	6 " 12	4	6 " 7
1853	23	0 " 27	14	6 " 16	8	0 " 11
1854	20	0 " 26	11	0 " 16	8	0 " 10
1855	23	6 " 26	14	0 " 16	10	0 " 11
1856	17	0 " 24	10	0 " 20	7	6 " 10
1857	20	0 " 29	10	6 " 15	9	3 " 11
1858	20	0 " 27	9	9 " 14	8	3 " 10
1859	20	0 " 25	10	0 " 14	8	9 " 11
1860	21	0 " 27	11	0 " 16	10	0 " 13
1861	21	0 " 29	12	0 " 22	6	3 " 14
1862	16	9 " 27	12	0 " 18	6	0 " 12
1863	20	0 " 30	12	0 " 16	8	0 " 11
1864	25	0 " 30	15	0 " 19	10	0 " 13
1865	15	6 " 32	15	0 " 25	10	0 " 17
1866	31	6 " 40	20	0 " 36	18	6 " 22
1867	20	0 " 30	14	0 " 22	7	6 " 13
1868	20	0 " 26	10	6 " 13	7	0 " 13
1869	22	0 " 28	11	0 " 14	6	9 " 9
1870	27	0 " 32	13	0 " 22	8	0 " 14
1871	23	0 " 37	13	0 " 23	11	0 " 16
1872	31	6 " 45	18	0 " 32	12	6 " 18
1873	28	0 " 39	16	6 " 27	7	0 " 16
1874	25	0 " 35	18	0 " 20	7	0 " 14
1875	26	6 " 37	15	0 " 21	9	6 " 17
1876	30	0 " 40	19	0 " 24	13	0 " 20
1877	35	0 " 38	18	0 " 25	13	6 " 23
1878	30	0 " 36	17	0 " 23	12	0 " 22
1879	25	0 " 35	16	0 " 24	10	6 " 20
1880	25	0 " 38	18	6 " 32	10	0 " 17
1881	30	0 " 39	15	0 " 23	10	0 " 15
1882	33	0 " 46	20	0 " 28	12	6 " 18
1883	36	0 " 50	24	6 " 33	14	0 " 21
1884	29	0 " 43	19	6 " 28	12	0 " 19
1885	24	0 " 34	18	0 " 22	10	0 " 15
1886	25	0 " 34	12	0 " 22	10	6 " 16
1887	23	0 " 30	11	0 " 19	8	0 " 13
1888	22	0 " 32	13	0 " 24	10	0 " 15
1889	26	0 " 40	18	0 " 30	13	0 " 22
1890	24	0 " 37	14	0 " 27	10	6 " 19
1891	21	0 " 37	10	0 " 24	7	6 " 15

TABLE NO. 2.—BLACKFACE SHEEP—*Continued.*

Year.	Wethers.		Ewes.		Lambs.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1892	16 0	to 28 6	6 0	to 17 0	2 0	to 10 0
1893	21 0	" 27 0	12 0	" 24 0	7 0	" 14 0
1894	20 0	" 27 0	14 6	" 26 6	8 6	" 16 6
1895	23 0	" 41 0	16 0	" 28 6	9 0	" 17 0
1896	19 0	" 35 4	13 0	" 24 0	6 0	" 13 6
1897	21 0	" 36 6	15 0	" 25 6	7 0	" 14 6
1898	22 0	" 37 0	16 0	" 26 6	8 0	" 15 0
1899	20 0	" 33 6	13 0	" 24 0	5 6	" 13 0
1900	23 0	" 36 0	16 0	" 26 6	8 0	" 15 6
1901	20 0	" 35 0	14 0	" 25 6	6 6	" 14 6
1902	18 6	" 34 0	12 0	" 24 0	6 0	" 14 0
1903	21 0	" 36 0	15 0	" 28 0	7 0	" 16 6
1904	23 0	" 38 6	18 0	" 30 0	8 6	" 17 6
1905	21 6	" 37 0	19 0	" 31 0	9 0	" 18 6
1906	23 0	" 38 0	20 0	" 33 0	10 0	" 19 6
1907	21 0	" 33 6	17 0	" 28 0	8 6	" 17 6
1908	19 6	" 30 0	15 0	" 24 6	8 0	" 16 0
1909	17 0	" 28 0	11 6	" 22 0	6 3	" 13 0
1910	21 0	" 22 6	16 0	" 27 6	8 0	" 17 0
1911	19 0	" 29 6	14 0	" 24 0	7 0	" 15 0
1912	21 6	" 32 6	17 0	" 27 6	9 6	" 17 6
1913	24 6	" 36 0	21 0	" 31 0	12 6	" 21 6
1914	27 0	" 38 6	25 0	" 34 6	15 6	" 24 0
1915	31 0	" 42 6	29 0	" 39 6	17 0	" 25 6
1916	33 0	" 46 6	31 0	" 42 0	19 0	" 27 6
1917	36 0	" 51 0	33 0	" 47 0	21 0	" 30 0
1918	41 0	" 56 0	36 0	" 50 0	27 0	" 33 0
1919	44 0	" 62 0	39 0	" 54 0	29 0	" 36 0
1920	46 0	" 86 0	44 0	" 62 0	31 0	" 48 0
1921	32 9	" 60 9	35 3	" 62 6	20 3	" 47 0
1922	40 3	" 63 0	40 6	" 74 0	18 0	" 44 0
1923	46 0	" 65 6	43 0	" 78 0	21 0	" 45 6
1924	46 0	" 68 6	45 6	" 85 0	25 0	" 55 6
1925	36 0	" 60 0	40 0	" 78 0	17 6	" 44 0
1926	30 0	" 54 0	31 0	" 70 0	Wether lambs—	
					21 9	" 49 0
					Ewe lambs—	
					19 0	" 50 0
					Wether lambs—	
					17 9	" 40 0
					Ewe lambs—	
					17 6	" 37 9
1927	26 6	" 48 0	26 0	" 64 0		

TABLE NO. 3.—PRICE OF WOOL, PER STONE OF 24 LB., SINCE 1818.

Year.	Laid Cheviot.		White Cheviot.		Laid Highland.		White Highland.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1818	40 0	to 42 2	..	..	20 0	to 22 6	..	..
1819	21 0	" 22 0	..	..	10 0	" 10 3	..	..
1820	20 0	" 22 0	..	..	9 0	" 10 0	..	..
1821	18 0	" 20 0	..	..	9 0	" 10 0	..	..
1822	12 6	" 14 6	..	..	5 0	" 6 6	..	..
1823	9 0	" 10 6	..	..	5 0	" 5 9	..	..
1824	13 6	" 15 0	..	..	6 0	" 6 3	..	..
1825	10 6	" 22 0	..	..	10 0	" 10 6	..	..
1826	11 0	" 14 0	..	..	5 0	" 5 6	..	..
1827	11 0	" 14 0	..	..	5 6	" 6 9	..	..
1828	8 0	" 11 0	..	..	5 6	" 6 0	..	..
1829	8 6	" 11 0	..	..	4 3	" 0 0	..	..
1830	9 6	" 11 0	..	..	4 6	" 5 0	..	..
1831	17 0	" 20 0	..	..	7 6	" 8 6	..	..
1832	14 0	" 16 0	..	..	7 0	" 7 6	..	..
1833	18 0	" 20 7	..	..	10 0	" 11 0	..	..
1834	21 0	" 24 6	..	..	5 6	" 7 0	..	..
1835	19 0	" 20 6	..	..	9 6	" 10 8	..	..
1836	21 0	" 25 0	..	..	10 0	" 14 0	..	..
1837	12 0	" 14 0	..	..	7 0	" 7 8	..	..
1838	19 0	" 22 6	..	..	6 0	" 10 0	..	..
1839	18 0	" 20 0	..	..	8 0	" 12 0	..	..
1840	15 0	" 0 0	..	..	7 0	" 0 0	..	..

TABLE No. 3.—PRICE OF WOOL—*Continued.*

Year.	Laid Cheviot.		White Cheviot.		Laid Highland.		White Highland.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1841	15 0	to 16 9	..	..	6 0	to 7 5	..	..
1842	12 6	" 14 0	..	..	not quoted.	..	..	..
1843	9 0	" 11 6	..	..	5 0	to 6 0	..	..
1844	15 0	" 18 0	..	..	not quoted.	..	..	..
1845	14 6	" 17 6	..	..	7 6	to 8 6	..	..
1846	12 0	" 14 6	..	..	8 0	" 8 6	..	..
1847	12 6	" 14 0	..	..	not quoted.	..	..	..
1848	9 6	" 11 0	..	..	4 9	to 0 0	..	..
1849	12 0	" 16 6	..	..	6 0	" 6 3	..	..
1850	15 0	" 17 6	..	..	8 0	" 8 6	..	..
1851	12 0	" 16 0	..	..	8 0	" 9 3	..	..
1852	18 0	" 15 0	..	..	8 0	" 9 0	..	..
1853	19 0	" 22 0	..	..	11 0	" 12 6	..	..
1854	12 0	" 15 0	..	..	7 6	" 8 6	..	..
1855	14 6	" 19 0	..	..	8 6	" 9 0	..	..
1856	19 0	" 21 6	..	..	11 0	" 0 0	..	..
1857	19 0	" 24 0	..	..	13 0	" 14 3	..	..
1858	15 0	" 17 0	..	..	8 9	" 10 0	..	..
1859	18 6	" 24 0	..	..	10 9	" 11 6	..	..
1860	22 0	" 32 0	37 0	to 88 0	10 0	" 11 8	..	..
1861	19 6	" 27 0	from 80s. upwards.	..	not quoted.	..	..	..
1862	18 6	" 26 0	30 0	to 37 0	11 6	to 16 0	..	..
1863	25 6	" 31 0	38 0	" 42 0	15 8	" 17 6	..	..
1864	31 0	" 39 0	47 0	" 54 0	17 6	" 20 0	..	..
1865	23 0	" 30 0	44 0	" 45 0	15 0	" 17 0	..	..
1866	24 0	" 30 0	30 0	" 38 0	14 0	" 16 0	..	..
1867	16 0	" 21 6	not quoted.	..	not quoted.	..	..	..
1868	19 0	" 26 0	28 0	to 32 0	8 6	to 9 0	..	..
1869	13 0	" 26 6	not quoted.	..	8 6	" 10 0	..	..
1870	15 0	" 23 6	25 0	to 26 0	9 6	" 0 0	..	..
1871	20 0	" 26 6	30 0	" 34 6	12 0	" 15 0	..	..
1872	26 0	" 37 6	40 0	" 48 0	18 0	" 21 0	..	..
1873	17 0	" 18 0	34 0	" 40 0	9 0	" 12 0	..	..
1874	18 6	" 26 6	30 0	" 34 0	9 6	" 13 0	..	..
1875	25 0	" 32 0	34 6	" 36 0	12 6	" 16 0	..	..
1876	20 0	" 24 0	30 0	" 34 6	9 6	" 12 0	..	..
1877	20 9	" 26 0	28 0	" 30 0	10 0	" 12 0	..	..
1878	18 9	" 25 0	27 0	" 32 0	8 6	" 11 6	..	..
1879	15 0	" 17 0	prices very low.	..	7 0	" 0 0	..	..
1880	20 0	" 24 0	30 0	to 32 0	10 6	" 11 6	14 0	to 15 0
1881	17 0	" 21 0	27 0	" 30 0	5 0	" 9 6	12 0	" 13 0
1882	14 0	" 18 0	27 6	" 28 0	7 6	" 9 0	13 0	" 14 0
1883	13 0	" 18 0	26 0	" 28 0	6 6	" 8 6	11 6	" 12 6
1884	13 0	" 18 0	26 0	" 28 0	6 6	" 8 6	11 6	" 12 6
1885	12 0	" 17 0	22 6	" 26 0	6 0	" 8 0	11 6	" 12 0
1886	13 0	" 18 0	23 0	" 27 6	6 6	" 8 6	11 6	" 12 0
1887	14 0	" 22 0	23 0	" 28 0	7 0	" 9 0	11 6	" 13 0
1888	13 0	" 20 0	23 0	" 28 0	7 0	" 9 0	11 0	" 12 6
1889	13 0	" 18 0	24 0	" 28 0	7 0	" 9 0	11 0	" 12 6
1890	13 0	" 18 0	24 0	" 28 0	7 0	" 9 0	11 0	" 12 6
1891	12 6	" 18 0	22 0	" 28 0	7 0	" 9 0	11 0	" 12 6
1892	12 0	" 18 0	20 0	" 28 0	7 0	" 8 6	10 6	" 12 0
1893	12 0	" 17 0	20 0	" 27 0	7 0	" 8 0	10 0	" 12 0
1894	12 0	" 16 0	20 0	" 26 0	7 0	" 8 0	10 0	" 12 0
1895	12 0	" 16 0	20 0	" 25 0	7 0	" 8 0	10 0	" 11 6
1896	11 0	" 15 0	19 0	" 24 0	7 0	" 8 0	10 0	" 11 6
1897	11 0	" 14 0	18 0	" 23 0	7 0	" 8 0	10 6	" 12 0
1898	10 0	" 13 0	16 0	" 20 0	7 0	" 8 0	10 0	" 11 6
1899	10 0	" 13 0	13 0	" 18 6	7 0	" 8 0	8 6	" 9 6
1900	9 9	" 12 0	13 0	" 18 6	6 9	" 7 9	8 0	" 9 6
1901	9 0	" 10 0	11 0	" 16 6	5 9	" 6 6	8 0	" 9 0
1902	9 0	" 10 0	11 6	" 17 0	6 0	" 6 6	8 6	" 9 6
1903	10 0	" 12 0	15 0	" 18 0	7 0	" 8 0	11 6	" 12 6
1904	15 0	" 17 0	20 0	" 21 0	9 0	" 10 0	14 0	" 15 0
1905	17 0	" 20 0	24 0	" 26 0	10 0	" 11 0	15 0	" 16 0
1906	18 0	" 21 0	27 0	" 28 6	11 6	" 13 0	16 6	" 17 6
1907	*	*	22 0	" 24 0	11 0	" 12 6	16 0	" 17 0
1908	*	*	16 0	" 18 0	†	†	8 0	" 8 6
1909	*	*	24 0	" 26 0	†	†	12 6	" 14 0
1910	*	*	25 0	" 30 0	†	†	13 0	" 14 6
1911	*	*	25 0	" 30 0	†	†	13 0	" 14 6
1912	*	*	24 0	" 29 0	†	†	14 0	" 15 0
1913	*	*	25 0	" 30 0	†	†	17 0	" 18 0
1914	*	*	24 0	" 29 0	†	†	15 0	" 15 6
1915 ‡	*	*	42 0	" 46 0	†	†	21 0	" 22 0

* No Cheviots smeared now.

† No Highlands smeared now.

‡ These are July prices.

PRICE OF WOOL PER STONE OF 24 LB.—Continued.

		CHEVIOT.				HALF-BRED.				BLACK-FACE.		CROSS-BRED (BLACKFACE EWE AND LEICESTER RAM).			
		Hogg.		EWE AND WETHER.		Hogg.		EWE AND WETHER.		Hogg.	EWE AND WETHER.	Hogg.		EWE AND WETHER.	
		Washed.	Un- washed.	Washed.	Un- washed.	Washed.	Un- washed.	Washed.	Un- washed.			Washed.	Un- washed.		
1916	CAITHNESS & SUTH- ERLAND	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
		36 6	30 0	33 0	27 6	34 6	28 6	33 0	27 6	23 0	23 0	28 6	25 6	28 6	25 6
1917	CAITHNESS & SUTH- ERLAND	40 0	32 6	34 0	29 0	35 0	29 0	34 0	28 6	25 6	25 6	31 6	28 6	31 6	28 6
		44 6	36 0	37 6	32 6	39 0	32 6	37 6	31 6	27 0	27 0	33 6	30 6	33 6	30 6
1918	CAITHNESS & SUTH- ERLAND	48 6	35 6	39 6	33 0	41 0	33 6	39 6	33 0	34 0	34 0	46 0	39 0	44 0	38 0
		47 6	38 6	40 0	34 6	41 6	34 6	40 0	33 6	24 0	24 0	35 0	29 0	34 0	27 0
1919	CAITHNESS & SUTH- ERLAND	84 0	70 0	82 0	66 0	82 0	62 0	70 0	58 0	9 6	9 6	13 0	10 0	12 0	10 0
		88 0	74 0	84 0	68 0	84 0	63 0	72 0	60 0	16 0	16 0	16 6	15 0	16 6	15 0
1920	CAITHNESS & SUTH- ERLAND	86 0	70 0	83 0	66 0	74 0	54 0	65 0	50 0	17 6	17 6	20 0	18 0	20 0	18 0
		90 0	74 0	87 0	68 0	76 0	56 0	68 0	52 0	25 6	25 6	34 6	30 6	33 0	30 0
1921	CAITHNESS & SUTH- ERLAND	22 0	17 0	19 0	15 0	18 6	14 6	16 0	13 0	25 6	25 6	26 0	23 6	25 6	23 0
		23 0	18 0	20 0	16 0	19 6	15 6	17 0	14 0	19 0	19 0	22 6	20 0	22 0	19 6
1922	CAITHNESS & SUTH- ERLAND	30 0	25 0	26 0	22 0	26 0	20 0	22 0	18 0	24 0	24 0	27 0	25 6	27 0	25 0
		31 6	26 0	27 0	23 0	27 0	21 0	23 0	19 0						
1923	CAITHNESS & SUTH- ERLAND	41 0	34 0	36 0	30 0	33 0	27 0	30 0	25 0						
		43 0	35 0	37 0	31 0	34 0	28 0	31 0	26 0						
1924	CAITHNESS & SUTH- ERLAND	53 0	49 0	53 0	45 0	49 0	40 0	45 0	39 0						
		60 0	50 0	54 0	46 0	50 0	41 0	46 0	40 0						
1925	CAITHNESS & SUTH- ERLAND	39 0	34 0	36 0	30 0	33 6	28 6	32 0	27 0						
		40 0	35 0	37 0	31 0	34 0	29 0	33 0	28 0						
1926	CAITHNESS & SUTH- ERLAND	35 0	29 0	32 0	28 0	32 0	26 6	28 0	24 6						
		36 0	30 0	33 0	29 0	33 0	27 6	29 0	25 6						
1927	CAITHNESS & SUTH- ERLAND	38 0	31 0	35 0	31 0	34 6	29 6	32 0	27 6						
		39 0	32 0	36 0	32 0	35 0	30 0	33 0	28 6						

¹ The prices given were prices fixed by Government, and not free market prices.

GENERAL SHOW AT EDINBURGH, 1927.

THE ninety-sixth Show of the Society was held at Saughton Park, Edinburgh, on Tuesday, 26th July, and three following days. This was the sixteenth Show to be held in Edinburgh.

While extensive damage was done to the Show buildings by a violent storm about a month before the Show, the weather during the days of the Show itself was, on the whole, favourable. A thunderstorm occurred on the Wednesday afternoon, with considerable rainfall, but otherwise the weather was fine. This was all the more fortunate in view of the torrential rains and widespread flooding which were experienced throughout the country, especially during the later part of the season.

Despite the prevailing depression in agriculture and in industry generally, there was a large attendance, the numbers who paid for admission reaching the gratifying total of 68,553. Compared with the previous Show in Edinburgh in 1919, which, however, was held under exceptional circumstances, this showed a reduction of 18,240, but was only 2993 less than the attendance at the very successful Show held at Glasgow in 1925.

The site at Saughton Park, granted by the Corporation of Edinburgh, was ample in extent, and although not so accessible to the public as the Meadows, was in other respects suitable and convenient. A supply of water was provided by the town free of charge.

There was an extremely good entry of live-stock, all sections being well filled, and the whole making an impressive display. The exhibition of implements and other articles was probably the largest and most comprehensive seen at the Society's Shows.

The system of Single Judging, which was in general operation for the first time, appeared to give complete satisfaction. The new competition in Stock Judging, for persons under the age of twenty-five years, attracted a large entry, and provided a keen contest. As a result of the experience gained, modifications will be made in future, which should add to the interest of the competition and increase its educational value.

It is gratifying to report that the accounts show a credit balance of about £2090. This is all the more satisfactory

when it is borne in mind that on this occasion no donations were received to the Show funds, apart from contributions to the prize fund, and the Society had to pay a substantial sum for the use of the Showground.

STATISTICS.

The following tables give the number of entries in the various sections:—

1. CATTLE.

Class.	SHORTHORN.	No. of Entries.
1. Aged bulls		8
2. Two-year-old bulls		2
3. Two-year-old bulls		2
4. One-year-old bulls		12
5. One-year-old bulls		11
6. Cows of any age		5
7. Two-year-old cows or heifers		7
8. One-year-old heifers		11
9. One-year-old heifers		11
		— 69

ABERDEEN-ANGUS.

10. Aged bulls		13
Extra Stock		1
11. Two-year-old bulls		11
12. One-year-old bulls		13
13. Cows of any age		8
14. Three-year-old cows		5
15. Two-year-old cows or heifers		9
16. One-year-old heifers		20
17. One-year-old heifers		15
		— 95

GALLOWAY.

18. Aged bulls		3
Extra Stock		1
19. Two-year-old bulls		4
20. One-year-old bulls		5
21. Cows of any age		6
22. Two-year-old cows or heifers		15
23. One-year-old heifers		17
		— 51

BELTED GALLOWAY.

24. Bulls born before 1st December 1925		3
25. Bulls born on or after 1st December 1925		9
26. Cows or heifers, born before 1st December 1924, in milk or in calf; if in calf, to calve on or before 1st December of the year of the Show		11
27. Heifers born on or after 1st December 1924		9
28. Heifers born on or after 1st December 1925		7
		— 39

HIGHLAND.

29. Aged bulls	2
30. Two-year-old bulls	4
31. One-year-old bulls	6
32. Cows of any age	8
33. Three-year-old cows or heifers	10
34. Two-year-old heifers	9
	— 39

AYRSHIRE.

35. Cows in milk, born before 1924	1
36. Cows in milk, born after 1st January 1924	5
37. Cows of any age, in calf, and due to calve before 1st December of the year of the Show	9
Extra Stock	1
38. Heifers, born in or after 1924, in calf, and due to calve before 1st December of the year of the Show	12
39. Two-year-old heifers	6
40. One-year-old heifers	8
41. Aged bulls	5
42. Two-year-old bulls	6
43. One-year-old bulls	10
	— 63

BRITISH FRISIAN.

44. Cows in milk, born in or before 1923	9
45. Cows in calf and not in milk, born in or before 1923	7
46. Cows in milk, born in 1924 or 1925	2
47. Heifers born in 1925	7
48. Heifers born before 1st July 1926	12
49. Heifers born on or after 1st July 1926	9
50. Bulls born in or before 1924	6
Extra Stock	1
51. Bulls born in 1925	4
52. Bulls born in 1926	4
	— 61

RED POLL.

53. Cows in milk, born before 1925	6
54. Heifers born in 1925	5
55. Heifers born in 1926	8
56. Bulls born in or before 1925	3
57. Bulls born in 1926	5
	— 27

DEXTER.

58. Cow of any age, in milk or in calf	2
59. Heifers, born in or after 1925	4
	— 6

FAT CATTLE.

60. Ox, born between 1st December 1924 and 1st December 1925	5
61. Ox, born on or after 1st December 1925	4
62. Heifer, born between 1st December 1924 and 1st December 1925	1
63. Heifer, born on or after 1st December 1925	2
	— 12
	462

2. HORSES.**DRAUGHT STALLIONS.**

64. Aged stallions	11
65. Three-year-old entire colts	13
66. Two-year-old entire colts	21
67. One-year-old entire colts	17
	— 62

DRAUGHT GELDINGS.

68. Aged geldings	8
69. Three-year-old geldings	10
70. Two-year-old geldings	17
	— 35

DRAUGHT MARES AND FILLIES.

71. Mares of any age with foal at foot	8
72. Yeld mares born before 1924	9
73. Three-year-old yeld mares or fillies	7
74. Two-year-old fillies	11
75. One-year-old fillies	15
	— 50

FOR EXHIBITION ONLY.

Suffolk Horses	4
Percheron Horse	1
	— 5

HUNTERS.

76. Hunter brood mares, with foal at foot	8
Extra Stock	1
77. Foals, any sex	9
78. Fillies or geldings, born in 1924, in hand	11
79. Fillies or geldings, born in 1925, in hand	13
80. Fillies, colts, or geldings, born in 1926, in hand	17
81. Mares or geldings, born before 1923, to carry 14 st. 7 lb. and upwards—in saddle	8
82. Mares or geldings, born before 1923, to carry 13 st., and under 14 st. 7 lb.—in saddle	9
83. Mares or geldings, born before 1923, to carry under 13 st.—in saddle	14
84. Mares or geldings, born in 1923—in saddle	6
85. Hack of hunter type, born before 1924, 15·2 hands and under—in saddle	6
	— 102

HIGHLAND PONIES.

86. Stallions, born before 1925, not exceeding 14·2 hands	4
Extra Stock	1
87. Mares, born before 1925, not exceeding 14·2 hands, yeld or with foal at foot	8
88. Entire colts, born on or after 1st January 1925	2
89. Fillies, born on or after 1st January 1925	4
	— 19

WESTERN ISLAND PONIES.

90. Stallions, born before 1925, not exceeding 14 hands	2
Extra Stock	1
91. Mares, born before 1925, not exceeding 14 hands, yeld or with foal at foot	7
Extra Stock	1
92. Entire colts, born on or after 1st January 1925	3
93. Fillies, born on or after 1st January 1925	5
	— 19

SHETLAND PONIES.

94. Stallions, not exceeding 10½ hands, born before 1924	7
95. Entire colts, not exceeding 10½ hands, born in 1924 or 1925	5
96. Mares, not exceeding 10½ hands, with foal at foot	9
97. Yeld mares, not exceeding 10½ hands	7
98. Fillies, not exceeding 10½ hands, born in 1924 or 1925	7
	— 35

RIDING PONIES.

99. Mares or geldings, any age, over 12 hands and not exceeding 14 hands, in saddle, to be ridden by boy or girl 10 years and under 14 years of age on first day of Show	10
100. Mares or geldings, any age, not exceeding 12 hands, in saddle, to be ridden by boy or girl under 10 years of age on first day of Show	4
	— 14

HORSES IN HARNESS.

101. Yeld mares, fillies, or geldings, any age, in harness, exceeding 15 hands, to be driven in the ring	6
102. Yeld mares, fillies, or geldings, any age, in harness, over 14 hands, and not exceeding 15 hands, to be driven in the ring	3
103. Yeld mares, fillies, or geldings, any age, not exceeding 14 hands, to be driven in the ring	2
	— 11

DRAUGHT GELDINGS IN HARNESS.

104. Draught geldings, any age, in harness, shown in cart or lorry (2)	5
	— 357

JUMPING.

1. Horses or ponies, any height	26
2. Horses or ponies, any height (not having won a prize of more than £10)	27
3. Horses or ponies, any height—handicap	25
4. Horses or ponies, any height	26
5. Horses or ponies, any height—handicap	22
	— 127

3. SHEEP.

BLACKFACE.

105. Tups above one shear	19
106. Shearling tups	28
107. Shearling tups—out-wintered	24
108. Tup lambs	10
109. Ewes above one shear, with lamb at foot	17
110. Shearling ewes or gimmers	20
	— 118

CHEVIOT.

111. Tups above one shear	15
112. Shearling tups	31
113. Tup lambs	27
114. Ewes above one shear, with lamb at foot	16
115. Shearling ewes or gimmers	25
	— 114

BORDER LEICESTER.

116. Tups above one shear	6
117. Shearling tups	29
118. Tup lambs	17
119. Ewes above one shear	12
120. Shearling ewes or gimmers	23
	— 87

HALF-BRED.

121. Tups above one shear	1
122. Shearling tups	10
123. Ewes above one shear	8
124. Shearling ewes or gimmers	13
125. Three ewe lambs	10
	— 42

OXFORD DOWN.

126. Shearling tups	16
127. Shearling ewes or gimmers	8
128. Tup lambs	11
129. Three ewe lambs	4
	— 39

SUFFOLK.

130. Tups one shear and over	8
131. Shearling ewes or gimmers	13
132. Tup lambs	23
133. Three ewe lambs	12
	— 56

SHROPSHIRE.

134. Shearling tups	5
135. Shearling ewes or gimmers	4
	— 9

DORSET HORN.

136. Tups, any age	6
137. Ewes or gimmers	7
	— 13

FAT SHEEP.

138. Three fat lambs, any breed or cross, dropped in the year of the Show	14
139. Three fat lambs, out of blackface ewes, dropped in the year of the Show	1
	— 15
	<u>493</u>

4. GOATS.

140. Male goats, any variety, over two years	2	
141. Male goats, any variety, over one but not exceeding two years	4	
142. Male kids, any variety, not exceeding one year	5	
143. Female goats, Anglo-Nubian, in milk	4	
144. Female goats, any other variety, in milk	18	
Extra Stock	2	
145. Goatlings, any variety, over one but not exceeding two years	9	
146. Female kids, any variety, not exceeding one year	18	
	—	62
147. Milking competition, open to classes 143 and 144 (23)	1	
	—	1
		<u>63</u>

5. PIGS.

LARGE WHITE.

148. Boars born before 1926	9	
149. Boars born in 1926	7	
150. Boars born in 1927	13	
151. Sows born before 1926	11	
152. Sows born in 1926	13	
153. Sows born in 1927	19	
	—	72

MIDDLE WHITE.

154. Boars born before 1927	8	
155. Boars born in 1927	11	
156. Sows born before 1926	5	
157. Sows born in 1926	7	
158. Sows born in 1927	15	
	—	46

LARGE BLACK.

159. Boars born before 1926	4	
160. Boars born in 1926	3	
161. Boars born in 1927	5	
162. Sows born before 1926	7	
163. Sows born in 1926	11	
164. Sows born in 1927	7	
	—	37

CUMBERLAND.

165. Boars born before 1927	1	
166. Boars born in 1927	1	
167. Sows born before 1927	1	
168. Sows born in 1927	2	
	—	5

LARGE WHITE ULSTER.

169. Boars born before 1927	2	
170. Boars born in 1927	9	
171. Sows born before 1927	19	
172. Sows born in 1927	11	
	—	41
		<u>201</u>

6. POULTRY.

1-119. Poultry	724
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7. FUR-PRODUCING RABBITS.

1-10. Rabbits	184
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8. HONEY, &c.

OPEN CLASSES.

1. Collection of appliances suitable for a beginner's outfit for bee-keeping	1
2. Best and most complete frame hive for general use, with any improvements. Unpainted	2
3. Best and most complete hive. Unpainted. Price not to exceed 35s.	1
4. Six sections of comb honey	10
5. Six sections of heather honey	4
6. Six jars of run or extracted light-coloured honey, approximate weight 6 lb.	14
7. Six jars of run or extracted medium or dark-coloured honey, excluding heather, approximate weight 6 lb.	8
8. Six jars of pressed heather honey in liquid form, approximate weight 6 lb.	8
9. Six jars of granulated honey, approximate weight 6 lb.	9
10. Two shallow frames of comb honey for extracting purposes	8
11. Products made with the aid of honey	2
12. Best display of honey in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet, weight of honey not to exceed 100 lb.	1
13. Best display of honey in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet, weight of honey not to exceed 40 lb.	3
14. Best exhibit of not less than 1 lb. of wax in any form	13
15. Best exhibit of not less than 1 lb. of wax made into shape for retail trade and over-counter trade	7
16. Observatory hive with queen and bees	11
	— 102

CONFINED TO SCOTTISH EXHIBITORS.

17. One standard frame of comb honey for extracting purposes	7
18. Six sections of comb honey	14
19. Six sections of heather honey	5
20. Six jars of run or extracted medium or dark-coloured honey, excluding heather, approximate weight 6 lb.	8
21. Six jars of run or extracted light-coloured honey, approximate weight 6 lb.	14
	— 48
	150

9. DAIRY PRODUCE.

1. Powdered butter, not less than 3 lb.	14
2. Fresh butter, three 1-lb. rolls	20
3. Cheddar cheese, 56 lb. and upwards	27
5. Cheese, 14 lb. and under	26
	— 87

10. WOOL.

PURE BREED CLASSES.

1. Blackface ewe	.	.	.	.	.	.	.	.	13
2. Blackface hogg	.	.	.	.	.	.	.	.	13
3. Cheviot ewe	.	.	.	.	.	.	.	.	9
4. Cheviot hogg	.	.	.	.	.	.	.	.	8
5. Border Leicester ewe	.	.	.	.	.	.	.	.	3
6. Border Leicester hogg	.	.	.	.	.	.	.	.	4
7. Half-bred ewe	.	.	.	.	.	.	.	.	7
8. Half-bred hogg	.	.	.	.	.	.	.	.	8
9. Shetland ewe	.	.	.	.	.	.	.	.	5
10. Shetland hogg	.	.	.	.	.	.	.	.	3
For Exhibition only	.	.	.	.	.	.	.	.	— 73
									2
									75

11. RURAL INDUSTRIES.

1-27	.	.	.	.	.	.	.	.	489
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12. HORSE-SHOEING.

1 and 2	.	.	.	.	.	.	.	.	88
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13. STOCK JUDGING COMPETITION.

.	.	.	.	.	.	.	.	.	56
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ABSTRACT.

1. Cattle	.	.	.	.	.	.	.	.	462
2. Horses	.	.	.	.	.	.	.	.	357
Horses—Jumping	.	.	.	.	.	.	.	.	127
3. Sheep	.	.	.	.	.	.	.	.	493
4. Goats	.	.	.	.	.	.	.	.	63
5. Pigs	.	.	.	.	.	.	.	.	201
6. Poultry	.	.	.	.	.	.	.	.	724
7. Fur-Producing Rabbits	.	.	.	.	.	.	.	.	184
8. Honey, &c.	.	.	.	.	.	.	.	.	150
9. Dairy Produce	.	.	.	.	.	.	.	.	87
10. Wool	.	.	.	.	.	.	.	.	75
11. Rural Industries	.	.	.	.	.	.	.	.	489
12. Horse-Shoeing	.	.	.	.	.	.	.	.	88
13. Stock Judging Competition	.	.	.	.	.	.	.	.	56
									3556

The following table gives a comparative view of the entries of cattle, horses, sheep, goats, pigs, poultry, rabbits, honey, dairy produce, wool, rural industries, &c., and implements,

of the value of the premiums offered, and of the receipts at the entrance-gates, grand stands, and for catalogues at the Shows which have been held in the Edinburgh Show Division:—

Year.	Cattle.	Horses.	Sheep.	Goats.	Pigs.	Poultry.	Rabbits.	Honey, &c.	Dairy Produce.	Wool.	Rural Industries.	Horse-Shoeing.	Stock Judging.	Competition.	Implement.	Premiums.	Drawings at Show.
1822	58	..	1	..	2	..	..	..	..	..	..	..	..	..	..	£78	£51
1823	44	..	3	..	5	..	..	..	..	..	..	..	..	..	..	110	75
1824	62	..	3	..	2	..	..	..	..	..	..	..	..	..	..	105	59
1825	42	..	3	..	4	..	..	..	..	..	..	..	..	..	..	110	80
1827	44	..	2	..	6	..	..	..	..	..	..	..	..	..	..	224	88
1842	295	179	175	..	29	..	..	..	38	13	..	..	..	..	200	1200	1,373
1848	351	142	325	..	50	64	..	..	165	..	..	..	..	..	310	1153	1,398
1859	332	188	288	..	54	109	..	..	54	..	..	..	..	..	980	1500	2,343
1869	310	212	340	..	22	239	..	..	..	..	..	..	..	..	1900	1600	4,078
1877	339	342	305	..	30	234	..	..	..	..	..	..	..	..	2292	2714	6,734
1884	580	453	493	..	35	253	..	1 04	..	..	..	..	..	..	2282	4343	6,548
1893	380	349	294	..	31	360	..	..	88	..	..	..	..	..	2268	2600	4,918
1899	386	518	477	..	46	551	..	..	44	14	..	..	..	..	2585	3845	10,231
1907	363	464	352	..	58	605	..	..	93	..	..	..	..	..	2140	3613	7,588
1919	215	301	221	60	43	398	..	35	48	40	..	..	..	..	1605	4517	17,377
1927	462	357	493	63	201	724	184	150	87	75	489	88	56	..	2874	6049	12,315

A COMPARISON.

The following figures relating to some of the most successful Shows the Society has held will be perused with interest:—

	Cattle.	Horses.	Sheep.	Goats.	Pigs.	Poultry.	Rabbits.	Total Live Stock.	Implements.	Premiums.	Drawings at Show.	Profit.
Glasgow, 1867	286	212	257	..	58	150	..	963	1344	£1600	£3,005	£1307
Edinburgh, 1869	310	212	340	..	22	239	..	1123	1900	1600	4,078	2067
Glasgow, 1875	411	405	298	..	48	479	..	1639	2220	2665	6,231	3316
Edinburgh, 1877	339	342	305	..	30	234	..	1250	2292	2714	6,734	3710
Edinburgh, 1884	580	453	493	..	35	253	..	1814	2282	4343	6,548	1855
Edinburgh, 1893	380	349	294	..	31	360	..	1414	2268	2600	4,918	2323
Aberdeen, 1894	314	324	184	..	34	365	..	1221	2532	2440	5,121	1678
Perth, 1896	292	258	204	..	20	374	..	1148	1945	2205	4,788	2511
Glasgow, 1897	317	350	245	..	30	275	..	1217	2227	2397	4,392	2021
Edinburgh, 1899	386	518	477	..	46	551	..	1978	2585	3844	10,285	3911
Stirling, 1900	321	288	369	..	28	457	..	1463	2095	2915	4,305	1078
Inverness, 1901	360	257	204	..	22	499	..	1340	1460	2806	2,485	99
Aberdeen, 1902	330	253	243	..	42	475	..	1343	1988	2796	4,413	1604
Perth, 1904	348	315	283	..	35	413	..	1394	1972	3058	4,993	1828
Glasgow, 1905	310	462	284	..	60	534	..	1750	1875	3702	4,473	1203
Peebles, 1906	253	258	291	..	40	438	..	1280	1658	3072	2,596	416
Edinburgh, 1907	363	464	352	..	58	605	..	1842	2140	3814	7,061	2309
Aberdeen, 1908	331	299	237	..	42	509	..	1418	1931	3045	4,596	1881
Stirling, 1909	330	355	249	..	54	539	..	1527	1977	3017	4,638	1100
Dumfries, 1910	270	355	295	..	54	481	..	1455	1950	3057	3,411	562
Paisley, 1913	408	472	334	..	48	536	..	1798	1968	5109	6,468	2527
Edinburgh, 1919	215	301	221	60	43	398	..	1238	1605	4517	17,377	3275
Aberdeen, 1920	340	250	279	19	112	597	..	1597	2065	4608	14,120	1679
Stirling, 1921	367	279	299	59	188	582	..	1774	2201	5055	12,822	2350
Dumfries, 1922	422	272	339	41	229	588	..	1891	2156	5488	11,428	1090
Perth, 1924	406	283	366	21	202	760	..	2038	2382	5712	10,758	2311
Glasgow, 1925	461	340	349	31	178	577	178	2114	2570	6136	12,865	4226
Kelso, 1926	430	284	597	31	159	546	108	2156	2366	6004	9,218	324
Edinburgh, 1927	462	357	493	63	201	724	184	2484	2874	6049	12,315	2090

CATTLE.

The entry of Cattle numbered 462, which was practically the same as that at Glasgow in 1925. It is necessary to go back to the Edinburgh Show of 1884 to find an entry of cattle in excess of this figure.

Shorthorns were disappointingly few in numbers, the total entry being only 69, and of these a considerable number were absent. The President's Champion Medal was won by The Earl of Moray, Doune Lodge, Doune, with "Aldie Knight," 204,372 (Fig. 33), a handsome red roan two-year-old bull, bred by Mr Finlay MacGillivray, Aldie, Tain. His sire was "Calrossie White Prince," 197,192, and dam "Rosewood 92nd." This animal was also awarded the Duthie Perpetual Challenge Cup, the Tweeddale Gold Medal, and the Special Prize of £20 given by the Shorthorn Society for the best bull. The reserve for the Championship and the winner of the Shorthorn Society's Special Prize of £20 for best female was "Bapton Augusta," 71,904, a beautiful white two-year-old heifer, belonging to and bred by Sir Cecil Chubb, Bart., Bapton Manor, Codford, Wiltshire.

Aberdeen-Angus cattle, with 95 entries, had the highest number in any of the cattle sections, and the standard of quality was remarkably high throughout. Lord Glenconner, The Glen, Innerleithen, carried off the President's Champion Medal with "Eran of Netherton," 56,777 (Fig. 34), a magnificent specimen of the breed, which was placed first in an unusually strong class of senior bulls. He was bred by Mr Robert Hendry, Netherton, Aberlour, and got by "Pasteur of Ballindalloch," 53,283, out of "Elegos," 67,004. This animal also won the Ballindalloch Challenge Cup for the best bull and the Aberdeen-Angus Cattle Society's Champion Medal. The Ballindalloch Challenge Cup for the best cow went to Lieut.-Colonel Norman Kennedy, D.S.O., of Doonholm, Ayr, for "Elmina of Doonholm," 76,615, bred by exhibitor.

With an entry of 51, Galloways were well represented, the quality being good, especially in the female classes. The winner of the President's Champion Medal and the Dr Gillespie Memorial Trophy was found in "Princess of Auchineden," 28,479 (Fig. 35), the property of and bred by Mr W. B. Donaldson, Auchineden, Blanefield. This cow was considered to be one of the best seen at the Show for several years. Five years of age, she was got by "Warbond of Corriehalls," 14,518, out of "Rowena 3rd of Killearn," 25,267. The Galloway Cattle Society, to mark the Jubilee of its institution in 1877, offered a Jubilee Cup for the best group of three females, bred by exhibitor, and also medals to the winners of the first prizes

in each of the six classes. The Jubilee Cup was also won by Mr W. B. Donaldson.

A feature of the cattle section was the capital display made by the Belted Galloways, of which there was an entry of 39. The President's Champion Medal and the Knockbrix Challenge Cup were awarded to Mr John K. Graham, Mark Farm, Creetown, for his massive two-year-old bull "Gartmore Herbert," 477 B (Fig. 36), bred by Lieut.-Commander Sir A. B. T. Cayzer, Bart., R.N., Gartmore House, Perthshire, sire "Mark Hector," 56 B, dam "Nan of Auchengassel."

Of Highland Cattle there was an excellent entry of 39, with few absentees. After a keen contest the President's Champion Medal was awarded to the Earl of Southesk, Kinnaird Castle, Brechin, for his handsome home-bred three-year-old yellow heifer "Corrina of Southesk" (Fig. 37). This animal, which was also awarded the Highland Cattle Society's Perpetual Victory Challenge Cup for the best female, was sired by "Ossian Ban of Atholl," 3176, her dam being "Corrina IV," 9401. The reserve for the Championship and winner of the corresponding Challenge Cup for the best male was "An-t-Uramach of Errol," a three-year-old light dun bull, the property of the Earl of Home, Douglas Castle, Lanarkshire, and bred by Brig.-General J. D. Heriot Maitland, C.M.G., D.S.O., of Errol.

Ayrshire entries were practically the same as last year, 63, but a larger number than usual was absent, due to the fact that an important consignment of animals had been recently exported to Canada. Mr John Johnstone, Millantae, Lockerbie, again secured the President's Champion Medal and the Ayrshire Cattle Herd-book Society's Special Prize of £10 for the best female with "Millantae Mayflower," 58,092 (Fig. 38), now ten years old. This noted brown and white cow, which gained the Championship at Kelso last year, was bred by exhibitor, and got by "Overton Hiawatha," 11,054, out of "Chapelerne Flower 2nd," 38,906. The Reserve Champion, winner of the Ayrshire Cattle Herd-book Society's Special Prize of £10 for the best bull, and the Cowhill Champion Cup—for which "Millantae Mayflower" was not eligible,—was "Dunlop Radiance," 25,732, a three-year-old white and brown bull, the property of Colonel W. T. R. Houldsworth, Threave, Kirkmichael, and bred by Mrs E. L. Houison-Craufurd, Dunlop Place, Dunlop.

British Friesians were well represented, there being an entry of 61, with few absentees. The exhibits all through reached a high standard of merit. The President's Champion Medal, the Paisley Perpetual Gold Challenge Cup, and the MacRobert Champion Silver Bell all went to Mr John Bromet, Golf Links Farm, Tadcaster, for "Golf Meibloem 2nd" (P.I.), 105,204 (Fig. 39). This beautiful yearling heifer was bred by

the exhibitor, her sire being "Northdean Hollander 2nd" (P.I.), 21,079, and dam "Golf Sietske's Vic 2nd" (P.I.), 61,816. The Reserve for Championship honours was, as last year, "Douneside Pel Pilot 2nd," 28,371, a two-year-old bull, the property of Mrs D. S. K. Eadie, The Hazelbank, Dunlop.

Red Poll entries numbered 27, being slightly more numerous than last year, and the quality was well maintained. The President's Champion Medal was won by Sir Herbert Hambling, Bart., D.L., Rookery Park, Suffolk, with "Royal Mavis," 30,347 (Fig. 40), a handsome six-year-old cow, bred by H.M. the King, and got by "Royal Sunshine," 11,452, out of "Lady Merle," 25,745. This animal also won the Kinmount Challenge Cup for the best female.

Classes were again provided for Dexter Cattle, but only six entries were received. Lady Usher, Wells, Hawick, was awarded the President's Champion Medal for "Wells Tess" (Fig. 41), a two-year-old home-bred cow, sire "Pontarfran Piper," 935, dam "Wells Trilby," 3699.

There was a small but creditable entry of Fat Cattle. The Championship went to Mr James D. Booth, Dens, Peterhead, for his two-year-old cross-bred ox "Buchan Stamp" (Fig. 42), bred by Messrs J. & A. Rannie, Hillhead of Pitullie, Fraserburgh.

HORSES.

There was a remarkably good entry of Draught Horses, especially in the younger classes, and many outstanding animals were on view.

In the male section a sweeping victory was scored by "Brunstane Again," 20,717 (Fig. 43), the famous six-year-old Stallion belonging to and bred by Mr Robert Park, Brunstane, Portobello. This animal, which was got by "Dunure Foot-print," 15,203, out of "Marseillaise," 35,946, was awarded the President's Champion Medal for the best Clydesdale Stallion or Colt, the Fife and Kinross Perpetual Gold Challenge Cup, and the Cawdor Challenge Cup for Males, given by the Clydesdale Horse Society.

Out of a strong entry of Draught Geldings, Messrs G. & J. Campbell, Gartness Farm, Balfron, again secured the Championship with their celebrated gelding "Warrior" (Fig. 44), which was champion at Kelso last year. This four-year-old brown gelding was bred by Mr John Thomson, Brioch; Doune, and sired by "Balcairn Warrior," 20,503.

A splendid selection of Draught Mares and Fillies came before the judge, who eventually awarded the President's Champion Medal for the best Clydesdale Mare or Filly to Mr Alexander Murdoch, East Hallside, Lanarkshire, for his noted three-year-old filly "Orange Blossom" (Fig. 45), which was

bred by Mr John Stirling, Parkhead, Alloa, sire "Dunure Footprint," 15,203, dam "Dunure Essence," 40,834. The Cawdor Challenge Cup for Clydesdale Mares or Fillies, for which "Orange Blossom" was not eligible, having won it last year, was awarded to Mr Robert Park's beautiful two-year-old filly "Brunstane Phyllis." It is noteworthy that the sire of "Brunstane Phyllis" ("Brunstane Again") was the winner of the Cawdor Cup for Males, her dam being "Eva of Murroes," 54,666, and her breeder Mr Robert M. Leslie, Murroes, Arbroath.

Four representatives of the Suffolk breed, a stallion, a mare, and two geldings, and one Percheron stallion, were entered for exhibition only. These attracted considerable attention, and were each awarded the Society's Silver Medal.

The entry of Hunters numbered 102, and it was generally considered that a better display had not been seen at the Show for many years. The President's Champion Medal was won by Mrs Hope-Johnstone, Raehills, Lockerbie, with "Last Love" (Fig. 46), a stylish brown five-year-old gelding, bred by exhibitor, and got by "Don Juan" out of "Arlette."

Highland and Western Island Ponies each secured an entry of 19. While this was only a moderate entry, many fine animals were forward, and they provided an attractive display. The President's Champion Medal for the best Highland Pony was secured by the Board of Agriculture for Scotland, Beechwood, Inverness, with "Faillie Rover," 1142 (Fig. 47), a typical grey-dun seven-year-old stallion, bred by exhibitors, and sired by "Prince Charlie II.," 653, dam "May Mist," 2314. The winner of the Championship for Western Island Ponies was Mr J. H. Munro Mackenzie of Calgary, Isle of Mull, the winning animal being "Pirate," 1204 (Fig. 48), a five-year-old grey home-bred stallion, got by "Glencruitten," 785, out of "Gometra," 1686.

Shetland Ponies were not outstanding in respect of numbers, the entry being 35, but they did not fail, as usual, to attract keen interest, both in the judging ring and on parade. The winner of the Champion Medal was found in "Dunsmuir," 1155 (Fig. 49), a black five-year-old stallion, the property of Mr William Mungall of Transy, Dunfermline. This animal was bred by Mr Francis N. M. Gourlay, Kirkland, Tynron, Thornhill, Dumfries, his sire being "May King of Penniwells," 769, and dam "Delia," 2327.

In a small entry of Harness Horses, Mr John Highet, Curtican, Ayr, gained the President's Champion Medal with his four-year-old brown mare "Wensleydale Flirt," 26,109 (Fig. 50), bred by Mr J. W. G. Smith, Marlbeck House, Aysgarth, sire "Southworth Swell," 11,219, dam "Glenavon Lightsome," 24,506.

Classes were again provided for Children's Riding Ponies

and Draught Geldings in Harness, and these attracted a fair entry.

In the Jumping Classes there was a good entry and keen competition, this feature of the Show being, as usual, a source of much interest and enjoyment to visitors.

SHEEP, PIGS, &c.

There was an extraordinarily good entry of Sheep, numbering 493, although this was naturally less than the record entry at Kelso in the preceding year. Goats were more numerous than usual, there being an entry of 63, with 24 in the Milking Competition. The classes for Pigs secured a large entry, reaching a total of 201, all breeds being well represented except the Cumberland, which had only 5 entries. The winners of the President's Champion Medals are shown in Figs. 51 to 64.

In the sections for Poultry, Rabbits, Dairy Produce, Honey, Wool, and Rural Industries the entries were above the average in numbers, and many excellent exhibits were staged.

The Horse-Shoeing Competition was well patronised, the entry being large and the work done of a high standard.



Fig. 33.—SHORTHORN BULL, "ALDIE KNIGHT" 201,372.

Winner of President's Medal for best Shorthorn, Edinburgh Show, 1927. The property of The Earl of Moray, Doune Lodge, Doune. Bred by Mr Finlay MacGillivray, Aldie, Tm. Age two years and three months.

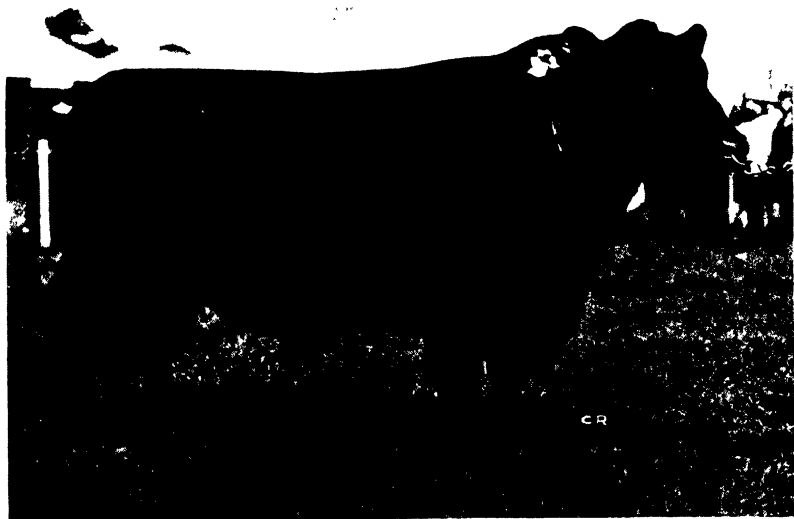


Fig. 34.—ABERDEEN-ANGUS BULL, "ERAN OF NETHERTON" 56,777.

Winner of President's Medal for best Aberdeen-Angus animal, Edinburgh Show, 1927. The property of Lord Glenconner, The Glen, Innerleithen. Bred by Mr Robert Hendry, Netherton, Aberlour. Age three years and six months.



Fig. 35.—GALLOWAY COW, "PRINCESS OF AUCHINEDEN" 28.479.

Winner of President's Medal for best Galloway, Edinburgh Show, 1927. Bred by and the property of Mr W. B. Donaldson, Auchineden, Blanchfield. Age five years and seven months.

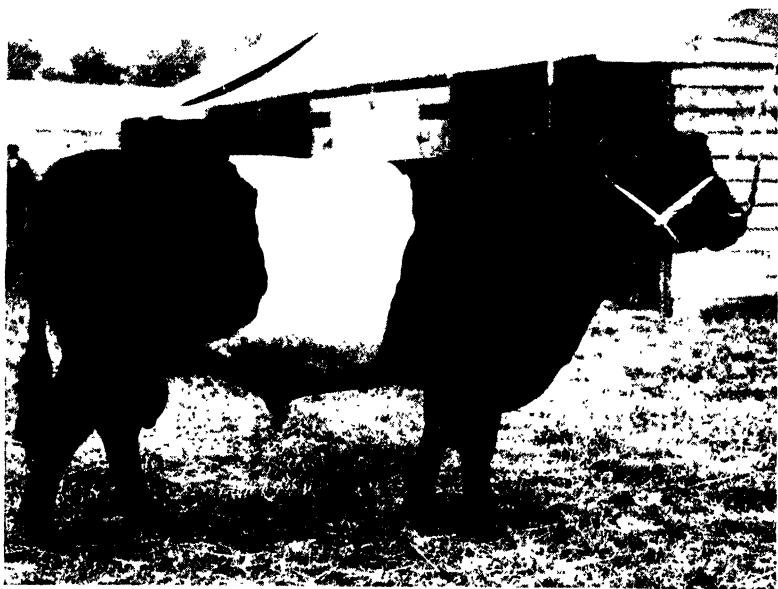


Fig. 36.—BELTED GALLOWAY BULL, "GARTMORE HERBERT" 477 B.

Winner of President's Medal for best Belted Galloway animal, Edinburgh Show, 1927. The property of Mr John K. Graham, Mark Farm, Creetown. Bred by Lt.-Com. Sir A. B. T. Cayzer, Bart, R N., Gartmore House, Perthshire. Age two years and four months.



Fig. 37.—HIGHLAND HEIFER, "CORRINA OF SOUTHESK."

Winner of President's Medal for best Highland animal, Edinburgh Show, 1927. Bred by and the property of The Earl of Southesk, Kinnaird Castle, Brechin. Age three years and five months.



Fig. 38.—AYRSHIRE COW, "MILLANTAE MAYFLOWER" 58,092.

Winner of President's Medal for best Ayrshire, Edinburgh Show, 1927. Bred by and the property of Mr John Johnstone, Millantae, Lockerbie. Age ten years and four months.



Fig. 39.—BRITISH FRIESIAN HEIFER, "GOLF MEIBICEM 2ND" P.I. 105,204.

Winner of President's Medal for best British Friesian animal, Edinburgh Show, 1927. Bred by and the property of Mr John Bromet, Golf Links Farm, Tadcaster. Age one year.



Fig. 40.—RED POLL COW, "ROYAL MAVIS" 30,317.

Winner of President's Medal for best Red Poll animal, Edinburgh Show, 1927. The property of Sir Herbert Hambling, Bart., D.L., Rookery Park, Yoxford. Bred by H.M. The King, Sandringham, King's Lynn. Age six years and six months.

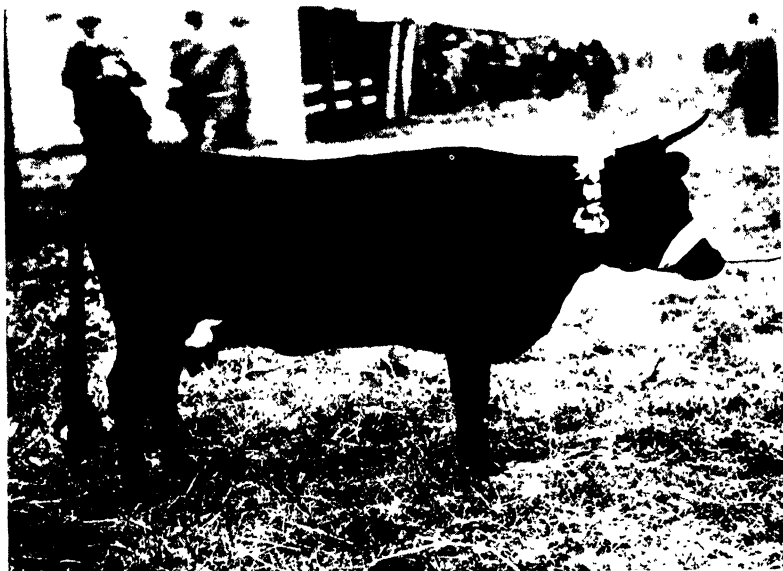


Fig. 41.—DEXTER COW, "WELLS TESS."

Winner of President's Medal for best Dexter animal, Edinburgh Show, 1927. Bred by and the property of Lady Usher, Wells, Hawick. Age two years and two months.

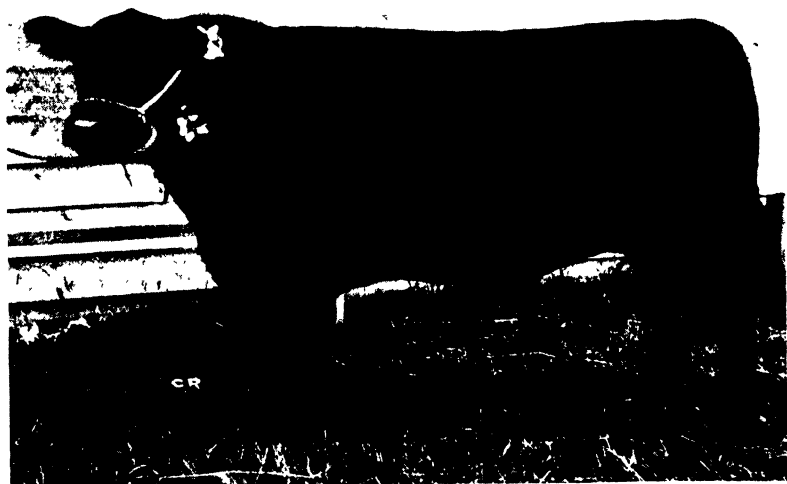


Fig. 42.—ABERDEEN-ANGUS CROSS OX, "BUCHAN STAMP."

Winner of President's Medal for best Fat animal, Edinburgh Show, 1927. The property of Mr James D. Booth, Dens, Peterhead. Bred by Messrs J. & A. Rennie, Hillhead of Pitlilie, Fraserburgh. Age two years and two months



Fig. 43.—CLYDESDALE STALLION, "BRUNSEANE AGAIN" 20,717.

Winner of President's Medal for best Clydesdale Stallion or Colt, Edinburgh Show, 1927. Bred by and the property of Mr Robert Park, Brunstane, Portobello. Age six years and two months.



Fig. 44.—DRAUGHT GELDING, "WARRIOR."

Winner of President's Medal for best Draught Gelding, Edinburgh Show, 1927. The property of Messrs G. & J. Campbell, Gartness Farm, Balfour. Bred by Mr John Thomson, Broich, Doune. Age four years and three months.

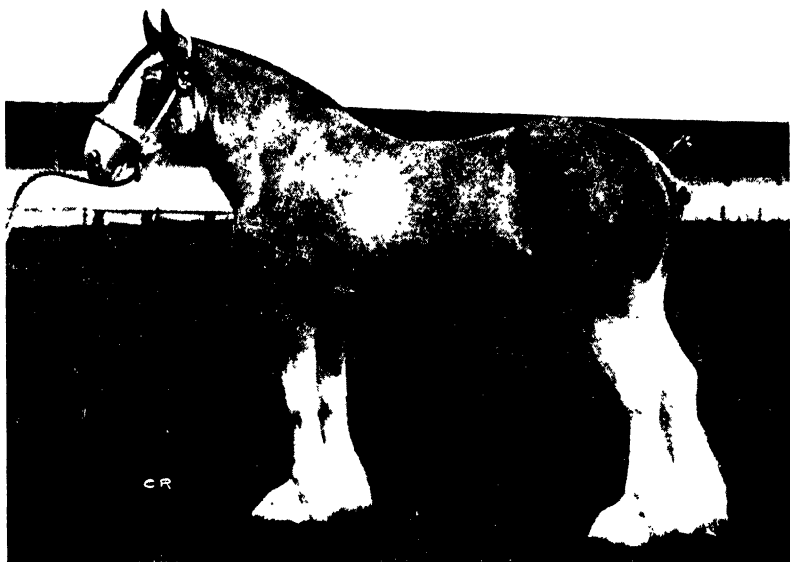


Fig. 45.—CLYDESDALE FILLY, "ORANGE BLOSSOM."

Winner of President's Medal for best Clydesdale Mare or Filly, Edinburgh Show, 1927. The property of Mr Alexander Murdoch, East Hallside, Hallside. Bred by Mr John Stirling, Parkhead, Alloa. Age three years and three months.

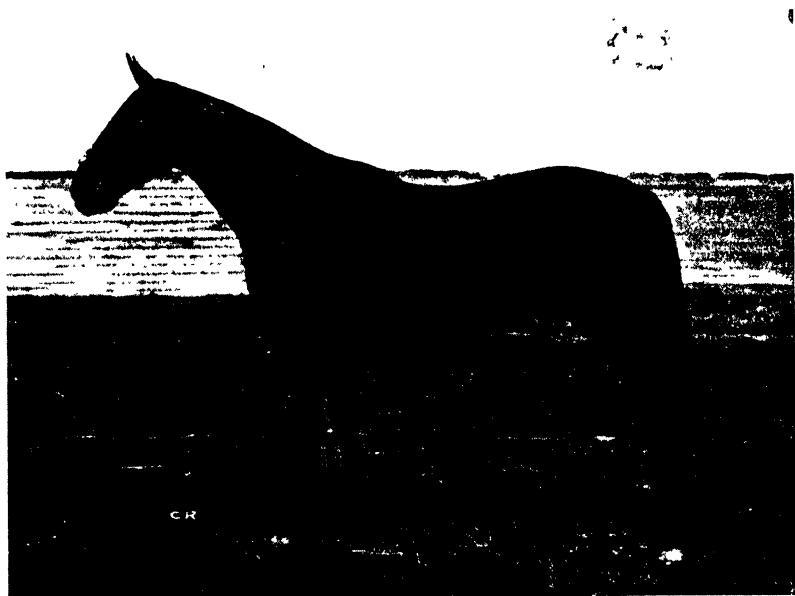


Fig. 46.—HUNTER GELDING, "LAST LOVE."

Winner of President's Medal for best Hunter, Edinburgh Show, 1927. Bred by and the property of Mrs Hope-Johnstone, Raehills, Lockerbie. Age five years and three months.



Fig. 47.—HIGHLAND PONY STALLION, "FAILLIE ROVER" 1142.

Winner of President's Medal for best Highland Pony, Edinburgh Show, 1927. Bred by and the property of The Board of Agriculture for Scotland, Beechwood, Inverness. Age seven years and two months.



Fig. 48.—WESTERN ISLAND PONY STALLION, "PIRATE" 1204.

Winner of President's Medal for best Western Island Pony, Edinburgh Show, 1927. Bred by and the property of Mr J. H. Munro Mackenzie of Calgary, Isle of Mull. Age five years and two months.

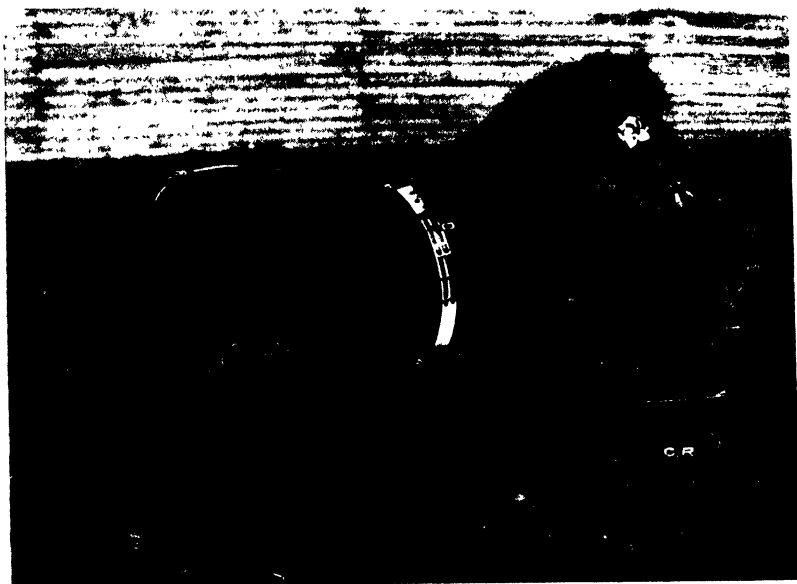


Fig. 49.—SHETLAND PONY STALLION, "DUN-MUIR" 1155.

Winner of President's Medal for best Shetland Pony, Edinburgh Show, 1927. The property of Mr William Mungall of Trausy, Dunfermline. Bred by Mr Francis N M Goulay, Kirkland, Tynron, Thornhill. Age five years and one month.



Fig. 50.—HACKNEY MARE, "WENSLEYDALE FLIRT" 26,109.

Winner of President's Medal for best animal in the Classes for Horses in Harness, Edinburgh Show, 1927. The property of Mr John Highet, Curtican, Ayr. Bred by Mr J. W. G. Smith, Marlbeck House, Aysgaith. Age four years.



Fig. 51.—BLACKFACE TUP, "SIR WALTER."

Winner of President's Medal for best Blackface, Edinburgh Show, 1927. Bred by and the property of Mr William Mitchell, Hazelside, Douglas. Age four shear.



Fig. 52.—CHEVIOT SHEARLING TUP.

Winner of President's Medal for best Cheviot, Edinburgh Show, 1927. Bred by and the property of Mr John Elliot, Blackhaugh, Clovenfords.



Fig. 53.—BORDER LEICESTER SHEARLING TUP.

Winner of President's Medal for best Border Leicester, Edinburgh Show, 1927. Bred by and the property of Mr Thomas Cross, Kneekdon Farm, Maybole.



Fig. 54.—HALF-BRED SHEARLING TUP.

Winner of President's Medal for best Half-bred, Edinburgh Show, 1927. Bred by and the property of Mr Adam Hogg, Duncanlaw, Gifford.

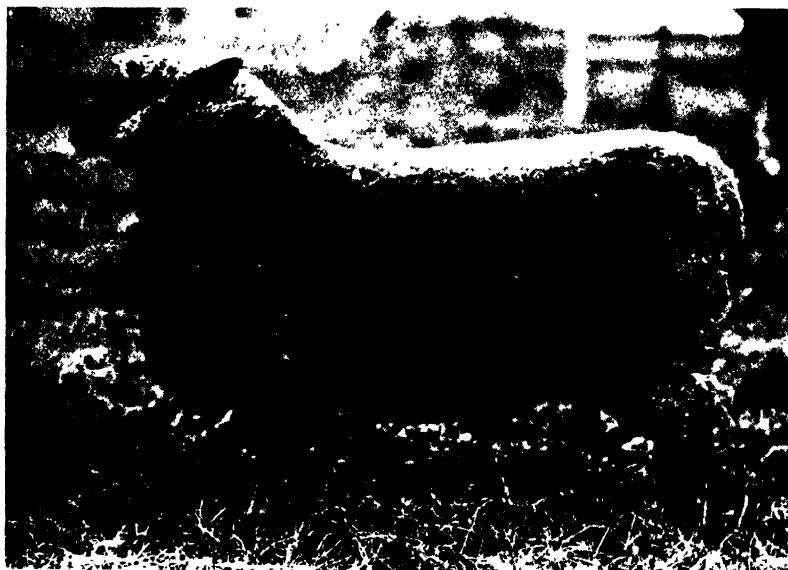


Fig. 55.—OXFORD-DOWN SHEARLING EWE.

Winner of President's Medal for best Oxford-Down, Edinburgh Show, 1927. Bred by and the property of Messrs T. & M. Templeton, Sandyknowe, Kelso



Fig. 56.—SUFFOLK EWE LAMB.

Winner of President's Medal for best Suffolk, Edinburgh Show, 1927. Bred by and the property of Mr William Rintoul, Kilmux, Leven.



Fig. 57.—SHROPSHIRE SHEARLING TUP.

Winner of President's Medal for best Shropshire, Edinburgh Show, 1927. Bred by and the property of Mr Thomas A. Buttar, Corston, Coupar-Angus.

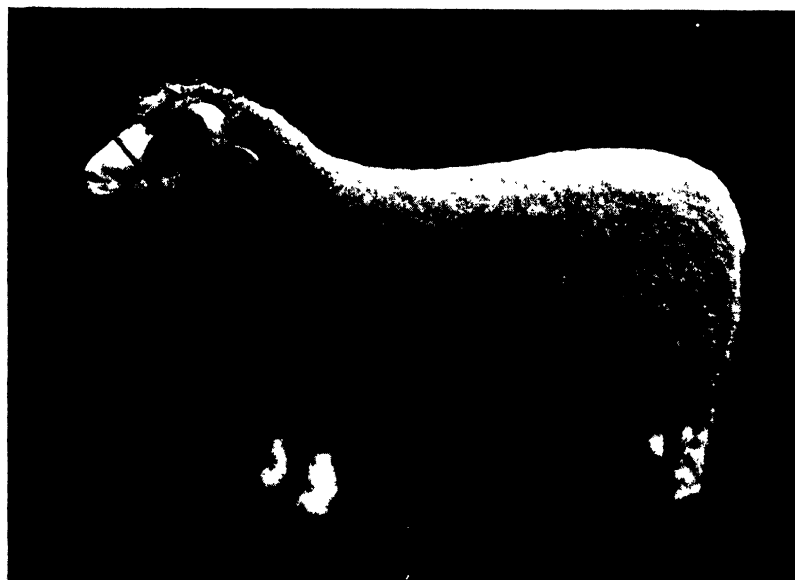


Fig. 58.—DORSET HORN TUP LAMB, "SYMONDSBURY No. 390" 5462.

Winner of President's Medal for best Dorset Horn, Edinburgh Show, 1927. The property of The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline. Bred by Mr Alfred Johnson, Symondsbury, Bridport.



Fig. 59.—ANGLO-NUBIAN-SWISS FEMALE GOAT, "RIDING TOPAZ" 5816.

Winner of President's Medal for best animal in the Goat Classes, Edinburgh Show, 1927. Bred by and the property of Miss Marjorie Henderson, The Riding, Hexham. Age four years and five months.



Fig. 60.—LARGE WHITE BOAR, "BOURNE BROKER 21ST" 52,293.

Winner of President's Medal for best Large White Pig, Edinburgh Show, 1927. The property of Mr Alastair N. Haig, Springfield Farm, Kintess. Bred by Mr Edmund Wherry, Bourne, Lincolnshire. Age three years and three months.



Fig. 61.—MIDDLE WHITE BOAR, "WHARFEDALE CLINKER" 51,673.

Winner of President's Medal for best Middle White Pig, Edinburgh Show, 1927. Bred by and the property of Mr Leopold C. Paget, Muddletoupe Hall, York. Age three years and six months.



Photo

"Farmer and Stockbreeder."

Fig. 62.—LARGE BLACK SOW, "BAYDON NIGHTINGALE 22ND" C 3098.

Winner of President's Medal for best Large Black Pig, Edinburgh Show, 1927. Bred by and the property of Mr Walter Woolland, Baydon Manor, Ramsbury, Wilts. Age one year and one month.

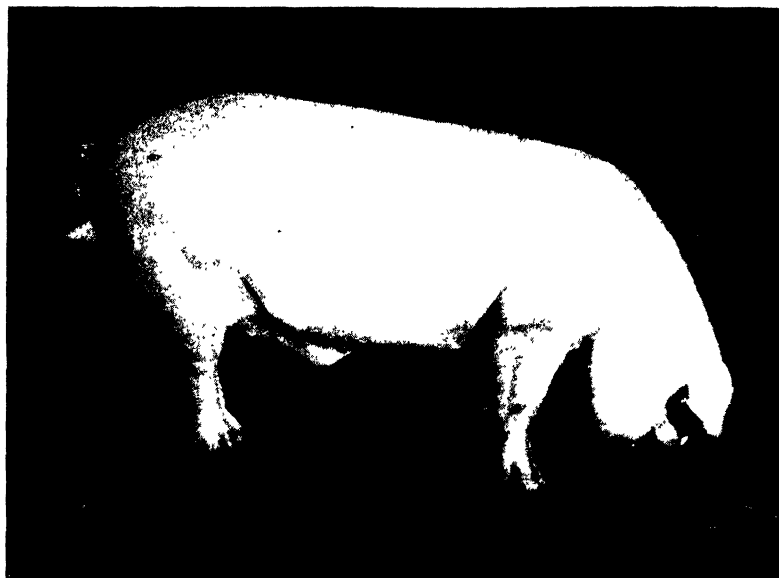


Fig. 63.—CUMBERLAND BOAR, "EAMONT PETER PAN."

Winner of President's Medal for best Cumberland Pig, Edinburgh Show, 1927. Bred by and the property of Mrs Carleton Cowper, Carleton Hall, Pennith. Age eleven months.

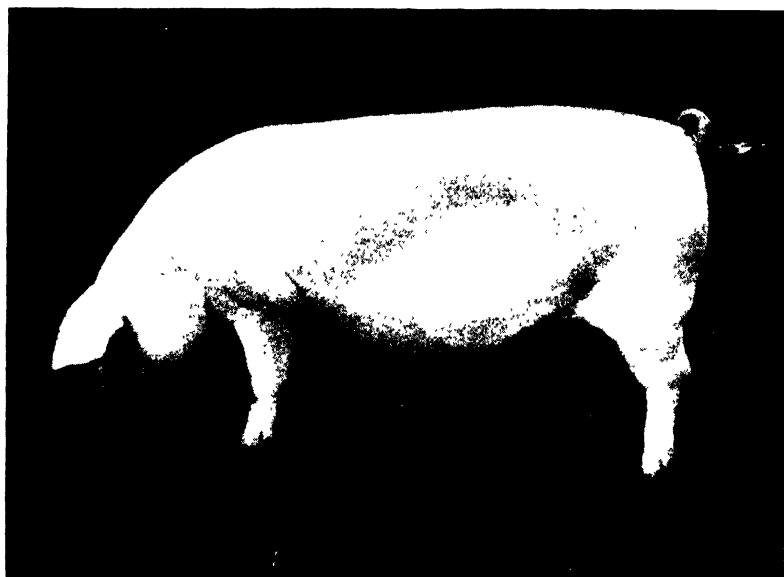


Fig. 64.—LARGE WHITE ULSTER SOW, "WOOD PARK PAINTED BEAUTY" 6654.

Winner of President's Medal for best Large White Ulster Pig, Edinburgh Show, 1927. The property of Viscount Allendale, Dilston, Corbridge-on-Tyne. Bred by Mr James Short, Wood Park, Anney, Beragh, Co. Tyrone. Age five months.

PREMIUMS AWARDED BY THE SOCIETY IN 1927.

EDINBURGH SHOW, *26th, 27th, 28th, and 29th July 1927.*

ABBREVIATIONS.—V., *Very Highly Commended.* H., *Highly Commended.*
C., *Commended.*

CATTLE SHORTHORN.

PRESIDENT'S CHAMPION MEDAL for best Shorthorn.

No. 12 Moray, The Earl of, Doune Lodge, Doune, Perthshire, "Aldie Knight" (204,372).

Reserve—No. 42 Chubb, Sir Cecil, Bart., Bapton Manor, Codford, Wilts., Heifer, "Bapton Augusta" (71,904).

The Duthie Perpetual Challenge Cup, value £150, *for best animal in the Shorthorn Classes, "Extra Stock" being eligible to compete.* This Cup was gifted by the late Mr William Duthie, Collynie.

No. 12 Moray, The Earl of, Doune Lodge, Doune, Perthshire, "Aldie Knight" (204,372).

Tweeddale Gold Medal *for best Shorthorn Bull*—Annual free income from fund of £500.

No. 12 Moray, The Earl of, Doune Lodge, Doune, Perthshire, "Aldie Knight" (204,372).

Best Shorthorn Bull in the Show, entered or eligible for entry in Coates's Herd-Book—£20, given by the Shorthorn Society.

No. 12 Moray, The Earl of, Doune Lodge, Doune, Perthshire, "Aldie Knight" (204,372).

Silver Medal to the *Breeder of the winner of above Prize*—given by the Short-horn Society.

No. 12 MacGillivray, Finlay, Aldie, Tain.

Breeder of best Bull of any age in Classes 1, 2, 3, 4, and 5—The Silver Medal.

No. 12 MacGillivray, Finlay, Aldie, Tain.

CLASS 1. BULL, born before 1st December 1924.—
PREMIUMS, £15, £10, £5, and £3.

- 1st No. 7 Meikle, Robert W., Bearcrofts, Grangemouth, "Manuel Scottish King" (200,773).
2nd No. 1 Fletcher, Captain A. M. Talbot, of Saltoun, Pencaitland, East Lothian, "Saltoun Cruiser" (193,849).
3rd No. 2 Graham, A. G. Maxtone, Redgorton, Perthshire, "Millhills Regal Star" (192,168).
4th No. 8 Snadden, W. M'Nair, of Coldoch, Blair Drummond, Stirling, "Garguston Golden Rod" (198,885).
V No. 5 Malcolm, William T., Whittingehame Mains, Haddington, "Collynie Rampart" (179,692).
H No. 4 Houldsworth, Captain J. F. H., Coltness, Wishaw, "Lawhill Rothes King" (200,302).

CLASS 2. BULL, born on or after 1st December 1924 and before 1st April 1925.—PREMIUMS, £15, £10, £5, and £3.

- 1st No. 9 Heaton, Executors of the late John, Startforth Hall, Barnard Castle, "Garguston Defiance" (207,532).
2nd No. 10 Stewart, Duncan M., Millhills, Crieff, "Millhills Dolphin" (209,681).

CLASS 3. BULL, born on or after 1st April 1925, and not later than 30th November 1925.—PREMIUMS, £12, £8, £4, and £2.

- 1st No. 12 Moray, The Earl of, Doune Lodge, Doune, Perthshire, "Aldie Knight" (204,372).
2nd No. 11 Heaton, Executors of the late John, Startforth Hall, Barnard Castle, "Startforth Landmark" (211,674).

CLASS 4. BULL, born on or after 1st December 1925, and not later than 31st March 1926.—PREMIUMS, £12, £8, £4, and £2.

- 1st No. 20 MacGillivray, Captain John, of Calrossie, Nigg Station, Ross-shire, "Clan Chattan."
2nd No. 16 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Millhills Prince Charming" (209,685).
3rd No. 23 Rosebery Estates, Dalmeny House, Edinburgh, "Lothian Crozier."
4th No. 19 Hunter, William C., of Arngask, Glenfarg, "Myrmidon."
V No. 17 Crawford & Balcarres, The Earl of, K.T., Balcarres, Colinsburgh, Fife, "Sanquhar Umpire."

CLASS 5. BULL, born on or after 1st April 1926.—

PREMIUMS, £10, £6, £4, and £2.

The Emilio R. Casares, jun., "Junior Champion Cup," value £50, for best Shorthorn Bull in Class 5, calved on or after 1st April of the year preceding the Show, that has passed the tuberculin test. Given by Mr Emilio R. Casares, jun.

No. 27 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Bantaskin Field Marshal."

Reserve—No. 28 Fletcher, Captain A. M. Talbot, of Saltoun, Pencaitland, East Lothian, "Saltoun Excelsior."

1st No. 33 Lee, Norman N., Stonelands, Arncliffe, Skipton-in-Craven, "Collynie Red Eagle."

2nd No. 31 Harrison, J. & R., Gainford Hall, Gainford, Co. Durham, "Gainford Provider."

3rd No. 27 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Bantaskin Field Marshal."

4th No. 28 Fletcher, Captain A. M. Talbot, of Saltoun, Pencaitland, East Lothian, "Saltoun Excelsior."

V No. 35 Rosebery Estates, Dalmeny House, Edinburgh, "Calrossie Prince Royal."

H No. 25 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Millhills Meteor."

C No. 29 Gordon, A. P., of Bindal, Portmahomack, "Balmuchy Coming Star."

Best Shorthorn Female in the Show, entered or eligible for entry in Coates's Herd-Book—£20, given by the Shorthorn Society.

No. 42 Chubb, Sir Cecil, Bart., Bapton Manor, Codford, Wilts., Heifer, "Bapton Augusta" (71,904).

Silver Medal to the Breeder of the winner of above Prize—given by the Shorthorn Society.

No. 42 Chubb, Sir Cecil, Bart., Bapton Manor, Codford, Wilts.

CLASS 6. COW, born before 1st December 1924, in

Milk.—PREMIUMS, £12, £8, £4, and £2.

1st No. 38 Crawford & Balcarres, The Earl of, K.T., Balcarres, Colinsburgh, Fife, "Balcarres Judith" (47,369).

2nd No. 37 Blair, Thomas, jun., Pitmedden, Dyce, Aberdeenshire, "Princess Royal 75th" (32,688).

CLASS 7. COW or HEIFER, born on or after 1st December

1924.—PREMIUMS, £10, £5, £3, and £2.

1st No. 42 Chubb, Sir Cecil, Bart., Bapton Manor, Codford, Wilts., Heifer, "Bapton Augusta" (71,904).

2nd No. 45 Harrison, J. & R., Gainford Hall, Gainford, Co. Durham, Heifer, "Prestwick Maud" (81,214).

3rd No. 41 Chubb, Sir Cecil, Bart., Bapton Manor, Codford, Wilts., Heifer, "Princess Alice" (71,907).

4th No. 47 Moray, The Earl of, Doune Lodge, Doune, Perthshire, Cow, "Doune Clipper 14th" (77,316).

V No. 44 Crawford & Balcarres, The Earl of, K.T., Balcarres, Colinsburgh, Fife, Heifer, "Lady Margery" (72,282).

H No. 43 Crawford & Balcarres, The Earl of, K.T., Balcarres, Colinsburgh, Fife, Heifer, "Lady Marion" (72,283).

C No. 46 Malcolm, William T., Whittingehame Mains, Haddington, Heifer, "Crimson Pearl" (76,738).

CLASS 8. HEIFER, born on or after 1st December 1925, and not later than 31st March 1926.—PREMIUMS, £10, £5, £3, and £2.

- 1st No. 50 Fletcher, Captain A. M. Talbot, of Saltoun, Pencaitland, East Lothian, "Saltoun Pearl."
 2nd No. 57 Rosebery Estates, Dalmeny House, Edinburgh, "Lothian Mayblossom 5th."
 3rd No. 58 Snadden, W. M'Nair, of Coldoch, Blair Drummond, Stirling, "Blood Royal 8th."
 4th No. 51 Fletcher, Captain A. M. Talbot, of Saltoun, Pencaitland, East Lothian, "Saltoun Goldie 4th."
 V No. 52 Graham, A. G. Maxtone, Redgorton, Perth, "Dorothy 21st."
 H No. 49 Elder, Thomas, of Stevenson, Haddington, "Stevenson Margaret" (73,089).
 C No. 53 Harrison, J. & R., Gainford Hall, Gainford, Co. Durham, "Gainford Broadhooks 7th."

CLASS 9. HEIFER, born on or after 1st April 1926.—PREMIUMS, £10, £5, £3, and £2.

- 1st No. 61 Chubb, Sir Cecil, Bart., Bapton Manor, Codford, Wilts., "Bapton Kilbean Beauty."
 2nd No. 60 Alexander, Messrs, Newbigging Farm, Rosewell, "Rosewell Beauty."
 3rd No. 68 Rosebery Estates, Dalmeny House, Edinburgh, "Lothian Maria 5th."
 4th No. 63 Fletcher, Captain A. M. Talbot, of Saltoun, Pencaitland, East Lothian, "Saltoun Orange Blossom 2nd."
 V No. 65 Houldsworth, Captain J. F. H., Coltness, Wishaw, "Coltness Missie."
 H No. 67 Moray, The Earl of, Doune Lodge, Doune, Perthshire, "Doune Clipper 16th."
 C No. 69 Snadden, W. M'Nair, of Coldoch, Blair Drummond, Stirling, "Coldoch Lady Broadhooks 3rd."

ABERDEEN-ANGUS.

PRESIDENT'S CHAMPION MEDAL for best Aberdeen-Angus Animal.

- No. 74 Glenconner, Lord, The Glen, Innerleithen, "Eran of Netherton" (56,777).
Reserve—No. 83 Grant, Sir George MacPherson, Bart., Ballindalloch Castle, Ballindalloch, "Jorum of Ballindalloch" (43,920).

Ballindalloch Challenge Cup, value £50, for the best Bull of any age in Classes 10, 11, and 12, given by the late Sir George MacPherson Grant, Bart.

- No. 74 Glenconner, Lord, The Glen, Innerleithen, "Eran of Netherton" (56,777).

Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.

- No. 74 Hendry, Robert, Netherton, Aberlour.

Breeder of best Bull of any age in Classes 10, 11, and 12—The Silver Medal.

- No. 74 Hendry, Robert, Netherton, Aberlour.

Champion Gold Medal for best animal in the Breeding Classes, Breeding Animals shown as "*Extra Stock*" being eligible to compete—given by the Aberdeen-Angus Cattle Society.

No. 74 Glenconner, Lord, The Glen, Innerleithen, "Eran of Netherton" (56,777).

CLASS 10. BULL, born before 1st December 1924.—
PREMIUMS, £15, £10, £5, and £3.

- 1st No. 74 Glenconner, Lord, The Glen, Innerleithen, "Eran of Netherton" (56,777).
 2nd No. 71 Cran, George, Morlich, Glenkindie, "Ermine's Ettrick" (56,817).
 3rd No. 79 Robertson, Peter D., Castlecraig, Nigg, Ross-shire, "Persistence" (53,327).
 4th No. 76 Howison, A. W., Lochbank, Blairgowrie, "Privateer of Lochbank" (59,915).
 V No. 75 Hendry, Robert, Netherton, Aberlour, "Priboc" (57,820).
 H No. 80 Scott, William, Aldbar, Brechin, "Eriskavan of Bleaton" (54,638).
 C No. 72 Findlay, Sir John R., Bart., of Aberlour, Aberlour, "Evident of Ballindalloch" (54,803).
 C No. 82 Webster, Gordon, Balzeordie, Brechin, "Winsome Boy" (55,998).

EXTRA STOCK.

The following was awarded the Silver Medal :—

No. 83 Grant, Sir George MacPherson, Bart., Ballindalloch Castle, Ballindalloch, "Jorum of Ballindalloch" (43,920).

CLASS 11. BULL, born on or after 1st December 1924.—
PREMIUMS, £15, £10, £5, and £3.

- 1st No. 88 M'Intyre, A., Theakston Hall, Bedale, Yorks., "Kinsman of Lochbank" (59,782).
 2nd No. 87 Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr, "Eryn of Doonholm" (59,161).
 3rd No. 93 Stewart, John, of Struthers, Woodburne House, Ceres, Cupar-Fife, "Ruler of Dunira" (60,370).
 4th No. 90 Petrie, John M'G., Asleid, New Deer, Aberdeenshire, "Rodes of Kinermony" (60,334).
 V No. 92 Robertson, Charles G., Tullochgribban, Grantown-on-Spey, "Genial Event" (59,446).
 H No. 85 Elliot, David P., Nisbet Hill, Duns, "Eros of Kinermony" (59,147).
 C No. 86 Howison, A. W., Lochbank, Blairgowrie, "Evermore of Lochbank" (59,323).
 C No. 89 Niven, John, Gloagburn, Tibbermore, Perth, "Bushranger of Gallovie" (58,591).

CLASS 12. BULL, born on or after 1st December

1925.—PREMIUMS, £12, £8, £4, and £2.

- 1st No. 95 Allan, Robertson, & Waddell, Ballintomb, Grantown-on-Spey, "Jayer Eric" (62,039).
 2nd No. 101 Murray, Thomas, & Sons, Laigh Grange, Maybole, "Escalon of Doonholm" (61,558).
 3rd No. 102 Petrie, John M'G., Asleid, New Deor, Aberdeenshire, "Earl of Buchan" (61,199).
 4th No. 97 Durham, The Earl of, K.G., Lambton Castle, Fence Houses, Co. Durham, "Guardsman of Lambton" (61,912).
 V No. 103 Prince-Smith, Sir Prince, Bart., Southburn House, Driffeld, East Yorks., "Yester of Southburn" (62,062).
 H No. 104 Reid, R. M., Tillyrie, Milnathort, "Jael Eric" (62,023).
 C No. 96 Campbell, Alexander C., Drummaird, Kennoway, Fife, "Excellence of Downieken" (61,732).
 C No. 98 Hendry, Robert, Netherton, Aberlour, "Proud Evident 2nd" (62,763).

Ballindalloch Challenge Cup, value £50, for the best Cow of any age in Classes 13, 14, and 15, given by the late Sir John MacPherson Grant, Bart.

- No. 118 Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr, "Elmina of Doonholm" (76,615).

Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.

- No. 118 Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr.

CLASS 13. COW, in Milk, born before 1st December

1923.—PREMIUMS, £12, £8, £4, and £2.

- 1st No. 108 Beddie, James, Banks, Strichen, "Gammer Iona" (73,458).
 2nd No. 109 Elliot, David P., Nisbet Hill, Duns, "Enchantress of Nisbet Hill" (73,951).
 3rd No. 110 Findlay, Sir John R., Bart., of Aberlour, Aberlour, "Epira" (71,634).
 4th No. 113 Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr, "Bignonia of Doonholm" (74,403).
 V No. 112 Grant, Sir George MacPherson, Bart., Ballindalloch Castle, Ballindalloch, "Primula of Ballindalloch" (64,752).
 H No. 111 Glenconner, Lord, The Glen, Innerleithen, "Esta of Nisbet Hill" (73,952).
 C No. 114 Macbeth, W. Gilchrist, Dunira, Comrie, "Pride of Correa" (66,253).
 C No. 115 Reid, Andrew Thomson, Auchterarder House, Auchterarder, "Pride of Evendale" (70,978).

CLASS 14. COW, in Milk, born on or after 1st December

1923.—PREMIUMS, £12, £8, £4, and £2.

- 1st No. 118 Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr, "Elmina of Doonholm" (76,615).
 2nd No. 120 Wilson, Walter, Inchgower, Buckie, "Jill of Inchgower" (77,777).
 3rd No. 116 Dalgleish, James P., of Westgrange, Bogside Station, Alloa, "Julia of Grange" (76,151).
 4th No. 119 Stewart, John W., Broadmeadows House, Hutton, Berwick-on-Tweed, "Bland of Morlich" (76,082).

CLASS 15. COW or HEIFER, born on or after 1st December 1924.—PREMIUMS, £10, £5, £3, and £2.

- 1st No. 127 Oamond, Leslie K., Beelsby Hall, Grimsby, Heifer, "Pinky Pride 14th of Duthil" (77,899).
 2nd No. 125 Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr, Heifer, "Bettina of Doonholm" (78,885).
 3rd No. 129 Wilson, Walter, Inchgower, Buckie, Heifer, "Edelweiss of Inchgower" (80,191).
 4th No. 122 Cumming, J. F., O.B.E., Kinermony Farm, Aberlour, Heifer, "Janette of Kinermony" (78,323).
 V No. 121 Cumming, J. F., O.B.E., Kinermony Farm, Aberlour, Heifer, "Bumming Maid of Kinermony" (78,318).
 H No. 128 Reid, R. M., Tillyrie, Milnathort, Heifer, "Black Grace of Advie" (78,712).
 C No. 126 Macbeth, W. Gilchrist, Dunira, Comrie, Heifer, "Eryngo of Harviestoun" (78,907).
 C No. 123 Honeyman, R. Wemyss, Derculich, Strathtay, Heifer, "Beryl of Pitmedden" (81,354).

CLASS 16. HEIFER, born on or after 1st December 1925 and before 1st March 1926.—PREMIUMS, £10, £5, £3, and £2.

- 1st No. 133 Findlay, Sir John R., Bart., of Aberlour, Aberlour, "Euxida" (80,960).
 2nd No. 132 Cumming, J. F., O.B.E., Kinermony Farm, Aberlour, "Pixie of Kinermony" (80,786).
 3rd No. 135 Grant, Sir George MacPherson, Bart., Ballindalloch Castle, Ballindalloch, "Joan of Ballindalloch" (81,146).
 4th No. 138 Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr, "Illora of Doonholm" (81,392).
 V No. 130 Allendale, Viscount, Dilston, Corbridge-on-Tyne, "Pride of Tynevale" (80,322).
 H No. 149 Waddell, James D., Clury Farm, Grantown-on-Spey, "Garden Pride of Clury" (82,625).
 C No. 143 Mackay, Charles, Balnastraid, Carr Bridge, Inverness-shire, "Bridges 154th" (80,420).
 C No. 145 Murray, Thomas, & Sons, Laigh Grange, Maybole, "Pride Elect of Laigh Grange" (81,926).
 C No. 148 Waddell, James D., Clury Farm, Grantown-on-Spey, "Wanda" (82,694).

CLASS 17. HEIFER, born on or after 1st March 1926.—PREMIUMS, £10, £5, £3, and £2.

- 1st No. 157 Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr, "Madeira of Doonholm" (81,393).
 2nd No. 151 Cumming, J. F., O.B.E., Kinermony Farm, Aberlour, "Evenso of Kinermony" (80,782).
 3rd No. 150 Allendale, Viscount, Dilston, Corbridge-on-Tyne, "Black Pearl of Bywell" (80,314).
 4th No. 163 Taylor, J. P. Ross, Mungos Walls, Duns, "Griselda of Mungos Walls" (82,267).
 V No. 162 Taylor, J. P. Ross, Mungos Walls, Duns, "Lady Betty of Mungos Walls" (82,270).
 H No. 164 Wilson, Walter, Inchgower, Buckie, "Minerva of Inchgower" (82,827).
 C No. 155 Hendry, Robert, Netherton, Aberlour, "Erse 3rd" (81,271).
 C No. 159 Mackay, Charles, Balnastraid, Carr Bridge, Inverness-shire, "Princess Evi of Advie" (81,214).
 C No. 160 Reid, Andrew Thomson, Auchterarder House, Auchterarder, "Black Lasso of Auchterarder" (82,102).

GALLOWAY.

PRESIDENT'S CHAMPION MEDAL for best Galloway.

No. 180 Donaldson, W. B., Auchineden, Blanefield, "Princess of Auchineden" (28,479).

Reserve—No. 187 Cunningham, John, Tarbreoch, Dalbeattie, Heifer, "Netty 42nd of Tarbreoch" (30,159).

Dr Gillespie Memorial Challenge Trophy, value £50, for best Galloway Animal registered in the Galloway Cattle Society's Herd-Book, entered in any of the Breeding Classes, Breeding Animals shown as "Extra Stock" being eligible to compete—given by the Galloway Cattle Society of Great Britain and Ireland.

No. 180 Donaldson, W. B., Auchineden, Blanefield, "Princess of Auchineden" (28,479).

Breeder of best Bull of any age in Classes 18, 19, and 20—The Silver Medal.

No. 166 Shepley-Shepley, R., Troquhain, Balmaclellan.

Galloway Cattle Society's Bronze Medal, to the Winner of the First Prize in Classes 18, 19, 20, 21, 22, and 23—given by the Galloway Cattle Society to mark the Jubilee of that Society, which was instituted in 1877.

No. 166 Cunningham, John, Tarbreoch, Dalbeattie, "Sentry" (15,446).

No. 171 Little, D. & J., Whitehill, Corrie, Lockerbie, "Ransom" (15,819).

No. 174 Henley, Lady, Askerton Castle, Brampton, Cumberland, "Cordon Bleu" (16,103).

No. 180 Donaldson, W. B., Auchineden, Blanefield, "Princess of Auchineden" (28,479).

No. 187 Cunningham, John, Tarbreoch, Dalbeattie, Heifer, "Netty 42nd of Tarbreoch" (30,159).

No. 207 Donaldson, W. B., Auchineden, Blanefield, "Beauty of Auchineden" (30,798).

CLASS 18. BULL, born before 1st December 1924.— **PREMIUMS, £15, £10, £5, and £3.**

1st No. 166 Cunningham, John, Tarbreoch, Dalbeattie, "Sentry" (15,446).

2nd No. 167 Graham, Robert, Chapel of Logan, Canonbie, "Grange Beau Brocade" (14,649).

3rd No. 165 Buccleuch and Queensberry, The Duke of, K.G., Drumlanrig Castle, Thornhill, "Barmark Investment" (15,558).

EXTRA STOCK.

The following was awarded the Silver Medal :—

No. 168 Buchanan-Jardine, Sir John W., of Castlemilk, Bart., Castlemilk, Lockerbie, "Warbond 2nd of Corriehalls" (14,837).

CLASS 19. BULL, born on or after 1st December 1924.—PREMIUMS, £15, £10, £5, and £3.

- 1st No. 171 Little, D. & J., Whitehill, Corrie, Lockerbie, "Ransom" (15,819).
 2nd No. 170 Gourlay, Francis N. M., Kirkland, Tynron, Thornhill, Dumfriesshire, "Leo of Castlemilk" (15,883).
 3rd No. 169 Cunningham, John, Tarbreoch, Dalbeattie, "Tarbreoch Worthy 6th" (15,791).
 4th No. 172 Paterson, Robert Jardine, Balgray Home Farm, Lockerbie, "Mark of Allergarth" (15,932).

CLASS 20. BULL, born on or after 1st December 1925.—PREMIUMS, £12, £8, £4, and £2.

- 1st No. 174 Henley, Lady, Askerton Castle, Brampton, Cumberland, "Cordon Bleu" (16,103).
 2nd No. 175 Jeffrey, C., Kirtleton, Waterbeck, Lockerbie, "Copyright of Tundergarth Mains" (16,360).
 3rd No. 173 Fraser, John, Barmark, Corsock, Dalbeattie, "Warbond 3rd" (16,265).
 4th No. 177 Malcolm, George, Dalwyne, Barr, Ayrshire, "Something Good" (16,349).

Galloway Cattle Society's Jubilee Cup, value £25, for the best group of *Three Females, bred by Exhibitor, "Extra Stock" being eligible to compete*—given by the Galloway Cattle Society to mark the Jubilee of that Society, which was instituted in 1877.

- No. 180 Donaldson, W. B., Auchineden, Blanefield, "Princess of Auchineden" (28,479).
 No. 188 Donaldson, W. B., Auchineden, Blanefield, Heifer, "Rosy of Auchineden" (30,175).
 No. 207 Donaldson, W. B., Auchineden, Blanefield, "Beauty of Auchineden" (30,798).

CLASS 21. COW, of any age, in Milk.—PREMIUMS, £12, £8, £4, and £2.

- 1st No. 180 Donaldson, W. B., Auchineden, Blanefield, "Princess of Auchineden" (28,479).
 2nd No. 182 Henley, Lady, Askerton Castle, Brampton, Cumberland, "Jess of Askerton" (27,432).
 3rd No. 179 Buchanan-Jardine, Sir John W., of Castlemilk, Bart., Castlemilk, Lockerbie, "Nanetta 2nd of Castlemilk" (28,618).
 4th No. 183 Jeffrey, C., Kirtleton, Waterbeck, Lockerbie, "Brachycome of Queenshill" (28,223).
 V No. 178 Buccleuch and Queensberry, The Duke of, K.G., Drumlanrig Castle, Thornhill, "Grand Dora 2nd of Corriehalls" (28,165).
 H No. 181 Graham, Robert, Chapel of Logan, Canonbie, "May Queen of Logan" (28,083).

CLASS 22. COW or HEIFER, born on or after 1st December 1924.—PREMIUMS, £10, £5, £3, and £2.

- 1st No. 187 Cunningham, John, Tarbreoch, Dalbeattie, Heifer, "Netty 42nd of Tarbreoch" (30,159).
 2nd No. 188 Donaldson, W. B., Auchineden, Blanefield, Heifer, "Rosy of Auchineden" (30,175).
 3rd No. 194 Graham, Robert, Chapel of Logan, Canonbie, Heifer, "Logan Lady 16th" (30,270).
 4th No. 186 Buchanan-Jardine, Sir John W., of Castlemilk, Bart., Castlemilk, Lockerbie, Heifer, "Lady Brownie of Castlemilk" (30,319).
 V No. 196 Little, D. & J., Whitehill, Corrie, Lockerbie, Heifer, "Blue Bell of Whitehill" (30,376).
 H No. 197 Little, D. & J., Whitehill, Corrie, Lockerbie, Heifer, "Nettie 16th of Whitehill" (30,377).
 C No. 184 Buccleuch and Queensberry, The Duke of, K.G., Drumlanrig Castle, Thornhill, Heifer, "Primula of Drumlanrig" (30,124).
 C No. 198 Paterson, Robert Jardine, Balgray Home Farm, Lockerbie, Heifer, "Doris of Balgray" (30,323).
 C No. 191 Fraser, John, Barmark, Corsock, Dalbeattie, Heifer, "Barmark Brownie 6th" (30,230).
 C No. 192 Gourlay, Francis N. M., Kirkland, Tynron, Thornhill, Dumfriesshire, Heifer, "Golden Favourite of Craigneston" (30,265).

CLASS 23. HEIFER, born on or after 1st December 1925.—PREMIUMS, £10, £5, £3, and £2.

- 1st No. 207 Donaldson, W. B., Auchineden, Blanefield, "Beauty of Auchineden" (30,798).
 2nd No. 212 Jeffrey, C., Kirtleton, Waterbeck, Lockerbie, "Kirtleton Tibbie" (30,941).
 3rd No. 204 Buchanan-Jardine, Sir John W., of Castlemilk, Bart., Castlemilk, Lockerbie, "Ivy of Castlemilk" (30,918).
 4th No. 203 Buccleuch and Queensberry, The Duke of, K.G., Drumlanrig Castle, Thornhill, "Musetta of Drumlanrig" (30,714).
 V No. 215 Paterson, Robert Jardine, Balgray Home Farm, Lockerbie, "Joan 2nd of Balgray" (30,935).
 H No. 214 Little, D. & J., Whitehill, Corrie, Lockerbie, "Barmark Brownie 7th" (30,825).
 C No. 202 Buccleuch and Queensberry, The Duke of, K.G., Drumlanrig Castle, Thornhill, "Satanella of Drumlanrig" (30,713).
 C No. 206 Buchanan-Jardine, Sir John W., of Castlemilk, Bart., Castlemilk, Lockerbie, "Lady Fashion of Castlemilk" (30,924).
 C No. 201 Buccleuch and Queensberry, The Duke of, K.G., Drumlanrig Castle, Thornhill, "Peridot of Drumlanrig" (30,712).

BELTED GALLOWAY.*PRESIDENT'S CHAMPION MEDAL for best Belted Galloway Animal.*

No. 217 Graham, John K., Mark Farm, Creetown, "Gartmore Herbert" (477 B).

Reserve—No. 245 Graham, John K., Mark Farm, Creetown, "Mark Bess 2nd" (1198 B).

Knockbrex Challenge Cup, value £50, for the best Belted Galloway Animal, "Extra Stock" being eligible to compete. This Cup was presented by Mrs Brown, Kirkbrex, Glasgow, for the best Belted Galloway animal registered in the Dun and Belted Galloway Cattle Breeders' Association Herd Book, entered in any of the breeding classes, at the Show at which it may be competed for.

No. 217 Graham, John K., Mark Farm, Creetown, "Gartmore Herbert" (477 B).

CLASS 24. BULL, born before 1st December 1925.

—PREMIUMS, £10, £5, £3, and £2.

1st No. 217 Graham, John K., Mark Farm, Creetown, "Gartmore Herbert" (477 B).

2nd No. 218 Hamilton, General Sir Ian, Lullenden Farm, East Grinstead, Sussex, "Lullenden Douglas" (449 B).

3rd No. 216 Bute, The Marquis of, K.T., Craigeach, Kirkcowan, "Mochrum Mark Ewart" (495 B).

CLASS 25. BULL, born on or after 1st December

1925.—PREMIUMS, £10, £5, £3, and £2.

1st No. 223 Graham, John K., Mark Farm, Creetown, "Mark Grenville" (661 B).

2nd No. 221 Brown, J. Douglas, Knockbrex, Kirkcudbright, "Knockbrex Dragon" (601 B).

3rd No. 220 Brown, J. Douglas, Knockbrex, Kirkcudbright, "Knockbrex Doge" (599 B (D)).

4th No. 227 Irving, Robert Chrystal, Shenley Lodge, Ridge Hill, Barnet, Herts., "Shenley Invention."

CLASS 26. COW or HEIFER, born before 1st December 1924, in Milk or in Calf; if in Calf, to calve on or before 1st December of the year of the Show.—PREMIUMS, £10, £5, £3, and £2.

1st No. 231 Bute, The Marquis of, K.T., Craigeach, Kirkcowan, Cow, "Mochrum Minnie" (236 B).

2nd No. 233 Graham, John K., Mark Farm, Creetown, Cow, "Mark Biddy 4th" (369 B).

3rd No. 228 Brown, J. Douglas, Knockbrex, Kirkcudbright, Cow, "Boreland Priceless Pearl" (132 B).

4th No. 232 Cayzer, Lt.-Com. Sir A. B. T., Bart., R.N., Gartmore House, Gartmore, Perthshire, Cow, "Gartmore Brenda 1st" (580 B).

V No. 237 Irving, Robert Chrystal, Shenley Lodge, Ridge Hill, Barnet, Herts., Cow, "Shenley Index" (854 B).

H No. 230 Brown, J. Douglas, Knockbrex, Kirkcudbright, Cow, "Knockbrex Beryl" (612 B).

CLASS 27. HEIFER, born on or after 1st December 1924.—PREMIUMS, £10, £5, £3, and £2.

- 1st No. 245 Graham, John K., Mark Farm, Creetown, "Mark Bess 2nd" (1198 B).
 2nd No. 242 Brown, J. Douglas, Knockbrev, Kirkcudbright, "Knockbrev Czarina" (766 B (D)).
 3rd No. 241 Brown, J. Douglas, Knockbrev, Kirkcudbright, "Knockbrev Claire" (762 B).
 4th No. 243 Cayzer, Lt.-Com. Sir A. B. T., Bart., R.N., Gartmore House, Gartmore, Perthshire, "Gartmore Dorothy 1st" (826 B).
 V No. 244 Cayzer, Lt.-Com. Sir A. B. T., Bart., R.N., Gartmore House, Gartmore, Perthshire, "Gartmore Grace 2nd" (828 B).
 H No. 247 Irving, Robert Chrystal, Shenley Lodge, Ridge Hill, Barnet, Herts., "Shenley Lady Agnes" (882 B (D)).

CLASS 28. HEIFER, born on or after 1st December 1925.—PREMIUMS, £10, £5, £3, and £2.

- 1st No. 251 Cayzer, Lt.-Com. Sir A. B. T., Bart., R.N., Gartmore House, Gartmore, Perthshire, "Gartmore Mary 2nd" (1038 B).
 2nd No. 254 Irving, Robert Chrystal, Shenley Lodge, Ridge Hill, Barnet, Herts., "Knockbrev Diadem."
 3rd No. 249 Brown, J. Douglas, Knockbrev, Kirkcudbright, "Knockbrev Donna" (974 B (D)).
 4th No. 248 Brown, J. Douglas, Knockbrev, Kirkcudbright, "Knockbrev Diamond" (970 B).
 V No. 253 Graham, John K., Mark Farm, Creetown, "Mark Biddy 9th" (1222).

HIGHLAND.

PRESIDENT'S CHAMPION MEDAL for best Highland Animal.

- No. 284 Southesk, The Earl of, Kinnaird Castle, Brechin, Heifer, "Corrina of Southesk."
 Reserve—No. 255 Home, The Earl of, Douglas Castle, Douglas, Lanarkshire, "An-t-Uramach of Errol."

Perpetual Victory Challenge Cup, approximate value 50 Guineas, for the best animal in the Male Classes, "Extra Stock" being eligible to compete—given by the Highland Cattle Society of Scotland.

- No. 255 Home, The Earl of, Douglas Castle, Douglas, Lanarkshire, "An-t-Uramach of Errol."

Breeder of best Bull of any age in Classes 29, 30, and 31—The Silver Medal.

- No. 255 Maitland, Brig.-General James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol.

CLASS 29. BULL, born before 1925.—PREMIUMS,
£15, £10, £5, and £3.

- 1st No. 255 Home, The Earl of, Douglas Castle, Douglas, Lanarkshire,
"An-t-Uramach of Errol."
2nd No. 256 Maze, Mrs M., Achnacloich, Connel, Argyll, "Royal Ernest"
(3252).

CLASS 30. BULL, born in 1925.—PREMIUMS,
£15, £10, £5, and £3.

- 1st No. 258 Invernairn, Lord, of Strathnairn, Flichity, Inverness, "Laoch
of Flichity."
2nd No. 260 M'Douall, A. K., of Logan, Stranraer, "Tormaid Og of
Logan."
3rd No. 259 M'Douall, A. K., of Logan, Stranraer, "Calum Riabhach
of Logan."
4th No. 257 Cowieson, F. D., Mains of Kilmaronock, Alexandria, "Kil-
maronock Prince."

CLASS 31. BULL, born in 1926.—PREMIUMS,
£12, £8, £4, and £2.

- 1st No. 265 Southesk, The Earl of, Kinnaird Castle, Brechin, "Ossian
IV. of Southesk."
2nd No. 261 Mackenzie, W. D., of Farr, House of Farr, Inverness, "Som-
hairle Buidhe of Farr."
3rd No. 266 Turner, Miss L. C., Kilchamaig, Whitehouse, Argyllshire,
"Fleasgach Riabhach of Kilchamaig."
4th No. 263 Maze, Mrs M., Achnacloich, Connel, Argyll, "Culnadalach."
V No. 262 Maze, Mrs M., Achnacloich, Connel, Argyll, "Laochan of
Achnacloich."
H No. 264 Southesk, The Earl of, Kinnaird Castle, Brechin, "Sir Colin."

Perpetual Victory Challenge Cup, approximate value 35 Guineas, *for the best animal in the Female Classes, "Extra Stock" being eligible to compete*—given by the Highland Cattle Society of Scotland.

- No. 284 Southesk, The Earl of, Kinnaird Castle, Brechin, Heifer, "Corrina
of Southesk."

CLASS 32. COW, of any age, in Milk.—PREMIUMS,
£12, £8, £4, and £2.

- 1st No. 267 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Bean
Bhan X. of Atholl."
2nd No. 273 Maitland, Brig-General James Dalgleish Heriot, C.M.G.,
D.S.O., of Errol, Errol Park, Errol, "Fuinary Princess of
Errol."
3rd No. 268 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl,
"Bheadarach VI. of Atholl."
4th No. 272 Maitland, Brig-General James Dalgleish Heriot, C.M.G.,
D.S.O., of Errol, Errol Park, Errol, "Fuinary Queen II.
of Errol."
V No. 274 Southesk, The Earl of, Kinnaird Castle, Brechin, "Sidonia
VII."
H No. 269 Home, The Earl of, Douglas Castle, Douglas, Lanarkshire,
"Morag Ruadh III. of Stronvar."
C No. 271 Maitland, Brig-General James Dalgleish Heriot, C.M.G.,
D.S.O., of Errol, Errol Park, Errol, "Shuna of Errol."

CLASS 33. COW or HEIFER, born in 1924.—

PREMIUMS, £10, £5, £3, and £2.

- 1st No. 284 Southesk, The Earl of, Kinnaird Castle, Brechin, Heifer, "Corrina of Southesk."
 2nd No. 285 Southesk, The Earl of, Kinnaird Castle, Brechin, Heifer, "Cornelia of Southesk."
 3rd No. 278 M'Douall, A. K., of Logan, Stranraer, Heifer, "Lady Nora of Logan."
 4th No. 281 Mackenzie, W. D., of Farr, House of Farr, Inverness, Heifer, "Una II. of Farr."
 V No. 283 Maitland, Brig.-General James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, Heifer, "Luna of Errol."
 H No. 277 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, Heifer, "Bean Bhan XIV. of Atholl."
 C No. 282 Maitland, Brig.-General James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, Heifer, "Shuna III. of Errol."

CLASS 34. HEIFER, born in 1925.—PREMIUMS, ' £10, £5, £3, and £2.

- 1st No. 292 Southesk, The Earl of, Kinnaird Castle, Brechin, "Lady Ruth II."
 2nd No. 291 Southesk, The Earl of, Kinnaird Castle, Brechin, "Sidonia of Southesk."
 3rd No. 294 Turner, Miss L. C., Kilchamaig, Whitehouse, Argyllshire, "Mairi XV."
 4th No. 290 Maitland, Brig.-General James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, "Shuna IV. of Errol."
 V No. 289 Mackenzie, W. D., of Farr, House of Farr, Inverness, "Una III. of Farr."
 H No. 288 Invernairn, Lord, of Strathnairn, Flichity, Inverness, "Morag of Flichity."
 C No. 287 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Te Riabhach XXIV."

AYRSHIRE.**CONDITIONS.**

1. To be eligible for competition in the Ayrshire Section cows must have an authenticated milk yield, and younger females (including cows which have not completed their first lactation) and bulls an authenticated milking pedigree, of a definite minimum amount.
2. The minimum amount referred to shall be as follows, calculated on the basis of a period between calvings of 52 weeks, and 3·8 per cent of butter fat :—
 - (a) Cows which have completed two or more lactations—700 gallons.
 - (b) Cows which have completed only one lactation—600 gallons.
 - (c) Younger females and bulls—an authenticated milking pedigree for dam and dam of sire on a similar basis.
3. In the case of cows with two or more lactations the record lodged may be that for any year the Exhibitor may select.

PRESIDENT'S CHAMPION MEDAL for best Ayrshire.

No. 310 Johnstone, John, Millantae, Lockerbie, "Millantae Mayflower" (58,092).

Reserve—No. 340 Houldsworth, Col. W. T. R., Threave, Kirkmichael, Maybole, "Dunlop Radiance" (25,732).

Cowhill Champion Cup, approximate value £30, for *best animal of the Ayrshire breed, entered with a number in the Herd-Book*. Presented by Major Henry Keswick, Cowhill Tower, Dumfries, to the Ayrshire Cattle Herd-Book Society, to be competed for annually at the Shows of the Highland and Agricultural Society of Scotland.

No. 340 Houldsworth, Col. W. T. R., Threave, Kirkmichael, Maybole, "Dunlop Radiance" (25,732).

Special Prize of £10 for the *best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June 1927*—given by the Ayrshire Cattle Herd-Book Society.

No. 310 Johnstone, John, Millantae, Lockerbie, "Millantae Mayflower" (58,092).

CLASS 35. COW in Milk, born before 1924.—
PREMIUMS, £12, £8, and £4.

- 1st No. 295 Corbett, The Hon. G., Rowallan, Kilmarnock, "Auchebrair Yellow Kate 12th" (54,219).
2nd No. 301 Clark, John, Dunrod Farm, Inverkip, "Threave Snowflight 7th" (84,482).

CLASS 36. COW in Milk, born on or after 1st January 1924.—PREMIUMS, £10, £7, and £3.

- 1st No. 299 Stewart, Sir Hugh Shaw, Bart., C.B., of Ardgowan, Inverkip, "Ardgowan Volta" (95,219).
2nd No. 297 Clark, John, Dunrod Farm, Inverkip, "Dunrod Ringmistress" (2305).
3rd No. 296 Clark, John, Dunrod Farm, Inverkip, "Dunrod Charm" (2300).
V No. 298 M'Alister, Mrs, Meikle Kilmory, Rothesay, "Meikle Kilmory Lady Bute 9th" (4253).
H No. 300 Stewart, Sir Hugh Shaw, Bart., C.B., of Ardgowan, Inverkip, "Ardgowan Vola" (3621).

CLASS 37. COW of any age, in Calf, and due to calve before 1st December of the year of the Show.—PREMIUMS, £10, £7, and £3.

- 1st No. 303 Dunlop, George, Craigraploch, Castle Douglas, "Craigraploch Meadow Sweet 3rd" (65,816).
2nd No. 302 Cowhill Estate Company, Limited, Holywood, Dumfries, "Cowhill Margaret" (91,940).
3rd No. 304 Houson-Craufurd, Mrs E. L., Dunlop Place, Dunlop, "Dunlop Thelma" (96,078).
V No. 307 M'Alister, Mrs, Meikle Kilmory, Rothesay, "Meikle Kilmory White Rose" (203).
H No. 306 Lawson, Andrew Stewart, Guildhouse, Forth, Lanarkshire, "Howie's Polly 2nd" (88,372).

EXTRA STOCK.

The following was awarded the Silver Medal :—

- No. 310 Johnstone, John, Millantae, Lockerbie, "Millantae Mayflower" (58,092).

CLASS 38. HEIFER, born in or after 1924, in Calf, and due to calve before 1st December of the year of the Show.—PREMIUMS, £10, £7, and £3.

- 1st No. 318 Houldsworth, Col. W. T. R., Threave, Kirkmichael, Maybole, "Windhill Rosie" (1632).
 2nd No. 315 Cowhill Estate Company, Limited, Holywood, Dumfries, "Cowhill Dairymaid" (94,877).
 3rd No. 322 Stewart, Sir Hugh Shaw, Bart., C.B., of Ardgowan, Inverkip, "Ardgowan Vanessa" (3605).
 V No. 321 Stewart, Sir Hugh Shaw, Bart., C.B., of Ardgowan, Inverkip, "Ardgowan Vamza" (3604).
 H No. 320 Rottenburg, F. A., Lochlane, Crieff, "Meikle Knox Winnie 3rd" (98,164).

CLASS 39. HEIFER, born in 1925.—PREMIUMS, £10, £5, and £3.

- 1st No. 327 Osborne, Robert & Matthew M., Morton Mains, Thornhill, Dumfriesshire, "Ryemuir Diana" (1870).
 2nd No. 324 Barr, Thomas, Hobsland, Monkton, "Hobsland Snow 2nd" (203).
 3rd No. 328 Stewart, Sir Hugh Shaw, Bart., C.B., of Ardgowan, Inverkip, "Ardgowan Santa" (3600).
 V No. 323 Airlie Estates Co., Home Farm, Cortachy Castle, Kirriemuir, "Cortachy Buttercup 2nd" (210).
 H No. 325 Cochrane, Alexander, Nether Craig, Kilmarnock, "Nether Craig Butterfly" (1519).

CLASS 40. HEIFER, born in 1926.—PREMIUMS, £8, £5, and £3.

- 1st No. 329 Barr, Thomas, Hobsland, Monkton, "Willoxton Madge" (8817).
 2nd No. 331 Cochrane, Alexander, Nether Craig, Kilmarnock, "Nether Craig Greta" (6712).
 3rd No. 332 Cowhill Estate Co., Limited, Holywood, Dumfries, "Cowhill Eleanor" (8768).
 V No. 330 Buchanan, Andrew, Westerton Farm, Kippen, "Westerton Queenie."
 H No. 336 Stewart, Sir Hugh Shaw, Bart., C.B., of Ardgowan, Inverkip, "Ardgowan Secret."
 C No. 335 Rottenburg, F. A., Lochlane, Crieff, "Carbeth Ethel 2nd" (9082).

Special Prize of £10 for the best Male Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June 1927—given by the Ayrshire Cattle Herd-Book Society.

- No. 340 Houldsworth, Col. W. T. R., Threave, Kirkmichael, Maybole, "Dunlop Radiance" (25,732).

Breeder of best Bull of any age in Classes 41, 42, and 43—The Silver Medal.

- No. 340 Houison-Craufurd, Mrs E. L., Dunlop Place, Dunlop,

CLASS 41. BULL, born before 1925.—PREMIUMS,
£12, £8, and £4.

- 1st No. 340 Houldsworth, Col. W. T. R., Threave, Kirkmichael, Maybole, "Dunlop Radiance" (25,732).
 2nd No. 339 Houson-Craufurd, Mrs E. L., Dunlop Place, Dunlop, "Auchenbrain British King" (25,610).
 3rd No. 341 Osborne, Robert & Matthew M., Morton Mains, Thornhill, Dumfriesshire, "Morton Mains Delineator" (26,094).
 V No. 338 Cowhill Estate Co., Limited, Holywood, Dumfries, "Slodahill Hector" (25,968).

CLASS 42. BULL, born in 1925.—PREMIUMS,
£10, £7, and £3.

- 1st No. 344 Houson-Craufurd, Mrs E. L., Dunlop Place, Dunlop, "Hobsland Brilliantine" (25,213).
 2nd No. 345 Rottenburg, F. A., Lochlane, Crieff, "Howie's X-Ray" (25,362).
 3rd No. 343 Buchanan, Andrew, Westerton Farm, Kippen, "Hobsland Heredity" (25,231).
 V No. 342 Barr, Thomas, Hobsland, Monkton, "Hobsland Finalist" (25,219).

CLASS 43. BULL, born in 1926.—PREMIUMS,
£8, £5, and £3.

- 1st No. 354 Orr, James, Kepculloch, Balforn, "Netherhall Magnificence" (26,415).
 2nd No. 353 Johnstone, John, Millantae, Lockerbie, "Rowallan Minto" (26,190).
 3rd No. 351 Howie, James, Hillhouse, Kilmarnock, "Howie's Topmost" (26,276).
 V No. 349 Cochrane, Alexander, Nether Craig, Kilmarnock, "Nether Craig Darling Boy" (26,674).
 C No. 355 Rottenburg, F. A., Lochlane, Crieff, "Lochlane Solicitor" (26,761).

BRITISH FRIESIAN.*PRESIDENT'S CHAMPION MEDAL for best British Friesian Animal.*

- No. 395 Bromet, John, Golf Links Farm, Tadcaster, "Golf Meibloem 2nd" (P.I.) (105,204).
Reserve—No. 411 Eadie, Mrs D. S. K., The Hazelbank, Dunlop, "Douneside Pel Pilot 2nd" (28,371).

Paisley Perpetual Gold Challenge Cup, value £300, for best British Friesian Animal, "Extra Stock" being eligible to compete. This Cup, along with an endowment of £600, was provided from money collected in Paisley by the late Provost Muir MacKean, and is in commemoration of the Society's first Show at Paisley in 1913.

- No. 395 Bromet, John, Golf Links Farm, Tadcaster, "Golf Meibloem 2nd" (P.I.) (105,204).
Reserve—No. 411 Eadie, Mrs D. S. K., The Hazelbank, Dunlop, "Douneside Pel Pilot 2nd" (28,371).

The MacRobert Champion Silver Bell, value 50 Guineas, *for the best animal in the British Friesian Classes, registered in or eligible for entry in the British Friesian Cattle Herd-Book, "Extra Stock" being eligible to compete.* Presented by Lady Rachel Workman MacRobert, Douneside, Tarland.

No. 395 Bromet, John, Golf Links Farm, Tadcaster, "Golf Meibloem 2nd" (P.I.) (105,204).

Champion Prize of £5 given by the British Friesian Cattle Society *for the best Female exhibited.*

No. 395 Bromet, John, Golf Links Farm, Tadcaster, "Golf Meibloem 2nd" (P.I.) (105,204).

CLASS 44. COW in Milk, born in or before 1923.

—PREMIUMS, £10, £5, and £3.

1st No. 362 Glentanar, Lord, Glen Tanar, Aboyne, "Northdean Barbara" (P.I.) (74,624).

2nd No. 361 Gladstone, T. E., Margery Flatts, Lanchester, "Dignit Fact" (60,762).

3rd No. 359 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Bute Vanessa" (59,668).

V No. 360 Francis, G. A., West Seaton, Arbroath, "Seaton Florrie" (48,762).

H No. 366 Pathhead & Sinclairtown Reform Co-operative Society, Limited, 102 Commercial Street, Kirkcaldy, "Lathalmond Audrey" (63,466).

CLASS 45. COW in Calf, and not in Milk, born in or before 1923.—PREMIUMS, £10, £5, and £3.

1st No. 367 Craig, John, Mill o' Cart Farm, Linwood, Paisley, "Cart Ada" (51,334).

2nd No. 368 Eadie, Mrs D. S. K., The Hazelbank, Dunlop, "Lochlands Pel Morn" (54,750).

3rd No. 369 Easson, George, Sheephousell Farm, Dunfermline, "Sheephousell Sybil" (66,104).

CLASS 46. COW in Milk, born in 1924 or 1925.—

PREMIUMS, £10, £5, and £3.

1st No. 374 Bromet, John, Golf Links Farm, Tadcaster, "Golf Dorander" (82,222).

2nd No. 375 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Longa 2nd" (81,184).

CLASS 47. HEIFER, born in 1925.—PREMIUMS,

£10, £5, and £3.

1st No. 378 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Ischia 3rd" (92,534).

2nd No. 377 Macaulay, Andrew, Lathalmond Farm, Dunfermline, "Lathalmond Tessmijn" (95,574).

3rd No. 379 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Maris" (92,536).

V No. 381 Pathhead & Sinclairtown Reform Co-operative Society, Limited, 102 Commercial Street, Kirkcaldy, "Abden Mysie" (89,076).

H No. 382 Stewart, Miss Helen T., Craigash, Milngavie, "Clobberfield Dauntless" (91,348).

CLASS 48. HEIFER, born in 1926, before 1st July.—
PREMIUMS, £10, £5, and £3.

- 1st No. 383 Bromet, John, Golf Links Farm, Tadcaster, "Golf Monikka 3rd."
 2nd No. 393 Ross, Errington, Castleheather, Inverness, "Castleheather Bunt" (102,436).
 3rd No. 388 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie-mains Beauty" (P.I.) (103,226).
 V No. 394 Sinclair, William, Loirston, Nigg, Aberdeen, "Kirkhill Jeltje 6th" (P.I.) (106,600).
 H No. 387 Glentamar, Lord, Glen Tanar, Aboyne, "Glen Tanar Folconda" (P.I.) (105,144).
 C No. 386 Glentamar, Lord, Glen Tanar, Aboyne, "Glen Tanar Chansura" (105,142).
 C No. 391 Macaulay, Andrew, Lathalmond Farm, Dunfermline, "Lathalmond Lady Akke" (P.I.) (106,944).

CLASS 49. HEIFER, born in 1926, on or after 1st July.
—PREMIUMS, £10, £5, and £3.

- 1st No. 395 Bromet, John, Golf Links Farm, Tadcaster, "Golf Meibloem 2nd" (P.I.) (105,204).
 2nd No. 400 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Hattsumer 4th" (P.I.) (104,000).
 3rd No. 403 Wilson, Alexander, Thornleypark, Paisley, "Gleniffer Stately" (105,130).
 V No. 398 Johnston, Thomas, Standalane, Falkirk, "Standalane Warrior's Ida" (110,194).
 H No. 396 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Bute Quince" (102,228).
 C No. 399 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Glossy 5th" (103,998).

Champion Prize of £5, given by the British Friesian Cattle Society for the best Male exhibited.

- No. 411 Eadie, Mrs D. S. K., The Hazelbank, Dunlop, "Douneside Pel Pilot 2nd" (28,371).

Breeder of best Bull of any age in Classes 50, 51, and 52—The Silver Medal.

- No. 411 MacRobert, The Trustees of Sir Alasdair W., Bart., Douneside, Tarland.

CLASS 50. BULL, born in or before 1924.—
PREMIUMS, £10, £5, and £3.

- 1st No. 404 Adam, James, Park, Nairn, "Douneside Ideal" (25,509).
 2nd No. 408 Kirkpatrick, Francis N., Loch House, Beattock, "Douneside Benefit" (25,497).
 3rd No. 405 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Hache Apollo" (P.I.) (22,925).
 V No. 406 Collie, George, Hillbrae, Inverurie, "Findlay Bourtree" (16,911).
 H No. 407 Jack, A., Brunstane Mills, Musselburgh, "Musselburgh Pluto" (26,615).
 C No. 409 Miller, James W., Lochhead, East Wemyss, "Loirston Brigand" (26,413).

CLASS 51. BULL, born in 1925.—PREMIUMS,
£10, £5, and £3.

- 1st No. 411 Eadie, Mrs D. S. K., The Hazelbank, Dunlop, " Douneside Pel Pilot 2nd " (28,371).
 2nd No. 412 Harbord, Mrs E., Kirk Deighton Hall, Wetherby, " Douneside Beatty " (28,357).
 3rd No. 414 Lawrie, James, Newrow, Balgowan, Methven, " Loirston Pride 2nd " (29,257).
 V No. 413 Law, Andrew, Bankrugg, Gifford, " Lowhouse Karel Jollity " (29,275).

CLASS 52. BULL, born in 1926.—PREMIUMS,
£10, £5, and £3.

- 1st No. 417 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, " Douneside Pel Klaas " (P.I.) (30,901).
 2nd No. 418 Pathhead & Sinclairtown Reform Co-operative Society, Limited, 102 Commercial Street, Kirkcaldy, " Douneside Albert 2nd " (30,881).
 3rd No. 416 M'Kendrick, Mrs Elizabeth, Craighends, Dennistoun, Kilmacolm, " Moordale Ambassador " (P.I.) (31,555).
 V No. 415 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, " Bute Rover " (30,599).

BRITISH FRIESIAN CATTLE SOCIETY'S SCOTTISH
" DERBY " COMPETITION.

SENIOR CLASS.

- No. 417 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, " Douneside Pel Klaas " (P.I.) (30,901).

BRITISH FRIESIAN CATTLE SOCIETY'S SCOTTISH
" OAKS " COMPETITION.

CHAMPIONSHIP,

- No. 400 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, " Douneside Hatsumer 4th " (P.I.) (104,000).
 Reserve—No. 391 Macaulay, Andrew, Lathalmond Farm, Dunfermline, " Lathalmond Lady Akke " (P.I.) (106,944).

SENIOR CLASS.

- 1st No. 391 Macaulay, Andrew, Lathalmond Farm, Dunfermline, " Lathalmond Lady Akke " (P.I.) (106,944).
 2nd No. 384 Eadie, Mrs D. S. K., The Hazelbank, Dunlop, " Caldwell Wanda " (102,284).

JUNIOR CLASS.

- 1st No. 400 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, " Douneside Hatsumer 4th " (P.I.) (104,000).
 2nd No. 399 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, " Douneside Glossy 5th " (103,998).

RED POLL.*PRESIDENT'S CHAMPION MEDAL for best Red Poll Animal.*

No. 422 Hambling, Sir Herbert, Bart., D.L., Rookery Park, Yoxford, Suffolk, "Royal Mavis" (30,347).

Reserve—No. 439 Leggat, Hugh, Arthurlie Park, Barrhead, "Holmwood Duke" (12,333).

Kinmount Challenge Cup, value about £50, for the best Female Animal in the Red Poll Classes registered in the Red Poll Cattle Society's Herd-Book, "Extra Stock" being eligible to compete. This Cup was presented to the Society by Lieut.-Colonel Charles Brook of Kinmount, Annan.

No. 422 Hambling, Sir Herbert, Bart., D.L., Rookery Park, Yoxford, Suffolk, "Royal Mavis" (30,347).

CLASS 53. COW in Milk or in Calf, born before 1925.—PREMIUMS, £10, £5, and £3.

1st No. 422 Hambling, Sir Herbert, Bart., D.L., Rookery Park, Yoxford, Suffolk, "Royal Mavis" (30,347).

2nd No. 420 Brook, Lt.-Col. Charles, of Kinmount, Annan, "Kinmount Roseleaf" (34,242).

3rd No. 424 Muirhead, Charles, Glentulchan, Glenalmond, Perthshire, "Atherstone Deena" (30,698).

H No. 421 Drysdale, Robert Douglas, Haughs of Cossans, Forfar, "Cossans Stella" (32,303).

CLASS 54. HEIFER, born in 1925.—PREMIUMS, £10, £5, and £3.

1st No. 425 H.M. The King, Sandringham, King's Lynn, "Royal Polly 2nd" (36,420).

2nd No. 427 Ireland, H. B., Ballindean, Kilmany, Dundee, "Ballindean Jean" (33,509).

3rd No. 429 Muirhead, Charles, Glentulchan, Glenalmond, Perthshire, "Tulchan Daisy" (36,700).

C No. 428 Leggat, Hugh, Arthurlie Park, Barrhead, "Grauntcourts Narcissus" (35,720).

CLASS 55. HEIFER, born in 1926.—PREMIUMS, £10, £5, and £3.

1st No. 431 Brook, Lt.-Col. Charles, of Kinmount, Annan, "Kinmount Sweet Chestnut 3rd."

2nd No. 430 H.M. The King, Sandringham, King's Lynn, "Royal Crystal Rose."

3rd No. 437 Tinker, Charley, Kilmartin, Inverness, "Kilmartin Sprite."

V No. 432 Brook, Lt.-Col. Charles, of Kinmount, Annan, "Kinmount Joanna."

H No. 434 Montrose, The Duchess of, Brodick Castle Home Farm, Brodick, Arran, "Isle of Arran Red Rose."

O No. 433 Ireland, H. B., Ballindean, Kilmany, Dundee, "Ballindean Lass."

C No. 436 Peterkin, William Bruce, Kingshouse, Strathyre, "Kingshouse Mavis."

CLASS 56. BULL, born in or before 1925.—PREMIUMS,
£10, £5, and £3.

- 1st No. 439 Leggat, Hugh, Arthurlie Park, Barrhead, "Holmwood Duke" (12,333).
 2nd No. 440 Leggat, Hugh, Arthurlie Park, Barrhead, "Arthurlie Majestic" (13,632).
 3rd No. 438 Brook, Lt.-Col. Charles, of Kinmount, Annan, "Kinmount Peter 2nd" (13,816).

CLASS 57. BULL, born in 1926.—PREMIUMS,
£10, £5, and £3.

- 1st No. 441 H.M. The King, Sandringham, King's Lynn, "Royal Rambler."
 2nd No. 442 Drysdale, Robert Douglas, Haughs of Cossans, Forfar, "Cossans Dairy King."
 3rd No. 443 Hambling, Sir Herbert, Bart., D.L., Rookery Park, Yoxford, Suffolk, "Yoxford Challenger."
 H No. 444 Leggat, Hugh, Arthurlie Park, Barrhead, "Arthurlie Son of Spring."
 C No. 445 Montrose, The Duchess of, Brodick Castle Home Farm, Brodick, Arran, "Isle of Arran Monk."

DEXTER.

PRESIDENT'S CHAMPION MEDAL for best Dexter Animal.

- No. 447 Usher, Lady, Wells, Hawick, "Wells Tess."
 Reserve—No. 446 Usher, Lady, Wells, Hawick, "Bagendon Emerald V." (3730).

CLASS 58. COW of any age, in Milk or in Calf.—
PREMIUMS, £10 and £5.

- 1st No. 447 Usher, Lady, Wells, Hawick, "Wells Tess."
 2nd No. 446 Usher, Lady, Wells, Hawick, "Bagendon Emerald V." (3730).

CLASS 59. HEIFER, born in or after 1925 —
PREMIUMS, £10 and £5.

- 1st No. 448 Kinloch, Lady, of Gilmerton, Gilmerton House, Drem, "Gilmerton Gossip."
 2nd No. 449 Kinloch, Lady, of Gilmerton, Gilmerton House, Drem, "Gilmerton Gumption."
 V No. 450 Usher, Lady, Wells, Hawick, "Wells Mavis."
 H No. 451 Usher, Lady, Wells, Hawick, "Wells Minx."

FAT CATTLE.*PRESIDENT'S CHAMPION MEDAL for best Fat Animal.*

No. 452 Booth, James D., Dens, Peterhead, "Buchan Stamp" (Cross Bull—Aberdeen-Angus Cow).

Reserve—No 461 Howison, A. W., Lochbank, Blairgowrie, "Raffles" (Shorthorn Bull—Aberdeen-Angus Cow).

CLASS 60. OX, any pure breed or cross, born on or after 1st December 1924 and before 1st December 1925.—PREMIUMS, £7 and £3.

1st No. 452 Booth, James D., Dens, Peterhead, "Buchan Stamp" (Cross Bull—Aberdeen-Angus Cow).

2nd No. 456 Grant, Captain William Smith, M.C., Minmore, Glenlivet, "Bill" (Aberdeen-Angus Bull—Cross Cow).

V No. 457 James, Robert, Laureceton Farm, Forres, "Jack."

H No. 454 Dickinson, R. & W. B., Longcroft, Oxtun, Berwickshire (Aberdeen-Angus Bull—Cross Cow).

C No. 455 Dickinson, R. & W. B., Longcroft, Oxtun, Berwickshire (Aberdeen-Angus Bull—Cross Cow).

CLASS 61. OX, any pure breed or cross, born on or after 1st December 1925.—PREMIUMS, £7 and £3.

1st No. 461 Howison, A. W., Lochbank, Blairgowrie, "Raffles" (Shorthorn Bull—Aberdeen-Angus Cow).

2nd No. 460 Duncan, John Bryce, Newlands, Dumfries, "Elan of Newlands" (61,291) (Aberdeen-Angus).

C No. 458 Dickinson, R. & W. B., Longcroft, Oxtun, Berwickshire (Aberdeen-Angus Bull—Shorthorn Cross Cow).

CLASS 62. HEIFER, any pure breed or cross, born on or after 1st December 1924 and before 1st December 1925.—PREMIUMS, £7 and £3.

1st No. 462 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline (Aberdeen-Angus Bull—P.B. Cow).

CLASS 63. HEIFER, any pure breed or cross, born on or after 1st December 1925.—PREMIUMS, £7 and £3.

1st No. 463 Beddie, James, Banks, Strichen (Aberdeen-Angus Bull—Cross Cow).

HORSES

FOR AGRICULTURAL PURPOSES.

DRAUGHT STALLIONS AND COLTS.

PRESIDENT'S CHAMPION MEDAL for best Clydesdale Stallion or Colt.

No. 471 Park, Robert, Brunstane, Portobello, Stallion, "Brunstane Again" (20,717).

Reserve—No. 524 Reith, Miss E. M., Kennerty Farm, Peterculter, Colt, "Renown."

Fife and Kinross Perpetual Gold Challenge Cup, value £200, for best Clydesdale Stallion or Colt, "*Extra Stock*" being eligible to compete. This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912.

No. 471 Park, Robert, Brunstane, Portobello, Stallion, "Brunstane Again" (20,717).

Reserve—No. 524 Reith, Miss E. M., Kennerty Farm, Peterculter, Colt, "Renown."

Cawdor Challenge Cup, value 50 Guineas, for best Clydesdale Stallion or Colt registered in the Clydesdale Stud-Book—given by the Clydesdale Horse Society.

No. 471 Park, Robert, Brunstane, Portobello, Stallion, "Brunstane Again" (20,717).

Breeder of best Male Animal of any age in Classes 64, 65, 66, and 67—The Silver Medal.

No. 471 Park, Robert, Brunstane, Portobello.

CLASS 64. STALLION, born before 1924.—
PREMIUMS, £20, £15, £10, and £4.

1st No. 471 Park, Robert, Brunstane, Portobello, "Brunstane Again" (20,717).

2nd No. 475 Wyllie, Scott, Milton of Luncarty, Perth, "Dearham Signet" (20,542).

3rd No. 468 Kilpatrick, James, Craigie Mains, Kilmarnock, "Warrix Ambition" (21,139).

4th No. 474 Riddell, Robert, Blackhall, Paisley, "King's Problem" (20,598).

V No. 470 Orr, A. & W., Rosebery, Gorebridge, "The Alien" (20,473).

CLASS 65. ENTIRE COLT, born in 1924.—

PREMIUMS, £20, £15, £10, and £4.

- 1st No. 486 Somerville, T. Purdie, Sandilands, Lanark, "Scotland's Marcellus" (21,383).
 2nd No. 477 Armstrong, J. A., The Beeches, Tarraly, Carlisle, "Arlosh Refiner" (21,161).
 3rd No. 488 Wyllie, Scott, Milton of Luncarty, Perth, "Milton Index" (21,357).
 4th No. 483 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie Crofter" (21,198).
 V No. 485 Pollock, John, Byres Farm, Pollokshaws, "Royal Observer" (21,245).
 H No. 478 Clark, Alexander, Strathore, Thornton, Fife, "Convince" (21,191).
 C No. 487 Sommerville, Robert, Wester Cowden, Dalkeith, "Cowden Ambition" (21,192).

William Taylor Memorial Prize of £10 and Certificate to the Breeder of the best Clydesdale Colt entered in Class 66 or 67—given by William Taylor Memorial Committee.

No. 524 Reith, Miss E. M., Kennerty Farm, Peterculter.

CLASS 66. ENTIRE COLT, born in 1925.—

PREMIUMS, £20, £15, £10, and £4.

- 1st No. 496 Cumming, Thomas, Easterhill Farm, Gartmore, "Barbadoes" (21,293).
 2nd No. 493 Clark, James, Windlaw, Carmunnock, "Royal Gaiety" (21,379).
 3rd No. 500 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie" (21,317).
 4th No. 491 Clark, Alexander, Strathore, Thornton, Fife, "Wireless" (21,392).
 V No. 490 Cairns, James, Abercromby, St Monance, "Kodoscope" (21,351).
 H No. 499 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie Winalot" (21,322).
 C No. 503 Marshall & Dickie, Kelton House, Dumfries, "Matthew's Choice."
 C No. 505 Sleigh, John P., of St John's Wells, Fyvie, "Craigie Coronach" (21,319).

CLASS 67. ENTIRE COLT, born in 1926.—

PREMIUMS, £15, £10, £6, and £4.

- 1st No. 524 Reith, Miss E. M., Kennerty Farm, Peterculter, "Renown."
 2nd No. 516 Gray, Andrew, Kersie Mains, Stirling.
 3rd No. 519 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie Eminence."
 4th No. 515 Filshie, William R., Mains of Cardross, Dumbarton, "Cardross Mains Sensation."
 V No. 514 Elliot, Charles S., Nisbet Hill, Duns, "Nisbet Reward."
 H No. 512 Armstrong, J. A., The Beeches, Tarraly, Carlisle, "Stainton Refiner."
 C No. 521 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, "Sabatini."

DRAUGHT GELDINGS.*PRESIDENT'S CHAMPION MEDAL for best Draught Gelding.*

No. 528 Campbell, G. & J., Gartness Farm, Balfron, "Warrior."
Reserve—No. 544 Wilson, William, Blackbyres, Barrhead, "Tom."

CLASS 68. DRAUGHT GELDING, born before 1924.—PREMIUMS, £10, £5, and £3.

- 1st No. 528 Campbell, G. & J., Gartness Farm, Balfron, "Warrior."
 2nd No. 532 Miller, William S., jun., Balmanno Castle, Bridge of Earn, "Norman."
 3rd No. 534 Murray, Douglas D., The Dene, Seaham Harbour, "Reality."
 V No. 533 Miller, William S., jun., Balmanno Castle, Bridge of Earn, "Chieftain."
 H No. 529 Dalziel, Robert, Rue, Auldgirth, "Prince."
 C No. 531 Meiklem, William, Bennoch Park, Kirkcaldy.

CLASS 69. DRAUGHT GELDING, born in 1924.—PREMIUMS, £8, £5, and £3.

- 1st No. 544 Wilson, William, Blackbyres, Barrhead, "Tom."
 2nd No. 538 Gray, George, Cander Mains, Stonehouse, Lanark, "Event."
 3rd No. 540 Kerr, William, Bell Mount, Penrith, "J. G. P."
 V No. 541 Mather, William, Milne Graden, Coldstream, "Black and White."

CLASS 70. DRAUGHT GELDING, born in 1925.—PREMIUMS, £8, £5, and £3.

- 1st No. 549 Clark, Alexander, Strathore, Thornton, Fife, "Dan."
 2nd No. 547 Campbell, G. & J., Gartness Farm, Balfron, "Sam."
 3rd No. 558 Matthews, A. B., British Linen Bank House, Newton-Stewart, "Baird."
 V No. 551 Dalziel, Robert, Rue, Auldgirth, "Jimmy."
 H No. 546 Broadfoot, Robert M., Whitekirk Mains, Prestonkirk.
 C No. 556 M'Kie, Messrs, Brisco Hill, Longtown, Cumberland, "Will Grey."

DRAUGHT MARES AND FILLIES.

PRESIDENT'S CHAMPION MEDAL for best Clydesdale Mare or Filly.

- No. 585 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, Filly, "Orange Blossom."
Reserve—No. 594 Park, Robert, Brunstane, Portobello, Filly, "Brunstane Phyllis."

Cawdor Challenge Cup, value 50 Guineas, for best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book—given by the Clydesdale Horse Society.

- No. 594 Park, Robert, Brunstane, Portobello, Filly, "Brunstane Phyllis."

CLASS 71. MARE of any age, with foal at foot.—

PREMIUMS, £20, £12, £7, and £4.

- 1st No. 564 Armstrong, J. A., The Beeches, Tarraly, Carlisle, "Virol."
 2nd No. 570 Walker, Robert, Langland, Kilmaurs, "Langlands Blossom."
 3rd No. 569 Sleigh, John P., of St John's Wells, Fyvie, "Wells Lorna."
 4th No. 565 Beck, George M., The Lane, Ravenstonedale, Westmorland,
 "Craigie Beauty" (56,012).
 V No. 566 Elliot, Charles S., Nisbet Hill, Duns, "Nisbet May Belle."

CLASS 72. YELD MARE, born before 1924.—

PREMIUMS, £15, £9, £6, and £4.

- 1st No. 572 Cairns, James, Abercromby, St Monance, "Abercromby
 Emma" (47,287).
 2nd No. 574 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Prud-
 ence."
 3rd No. 575 Miller, William S., jun., Balmanno Castle, Bridge of Earn,
 "Balmanno Julia."

CLASS 73. YELD MARE or **FILLY**, born in 1924.

—PREMIUMS, £15, £9, £6, and £4.

- 1st No. 585 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire,
 Filly, "Orange Blossom."
 2nd No. 586 Paterson, Robert, Stamperland, Cathcart, Glasgow, Filly,
 "Lady Arden."
 3rd No. 580 Aitkenhead, Charles, Carr House Farm, New Seaham, Filly,
 "Dignity."
 4th No. 581 Dalziel, Robert, Rue, Auldgirth, Filly, "Rue May Queen."
 V No. 582 Grant, Captain William Smith, M.C., Minmore, Glenlivet,
 Filly, "Lady Helen."

CLASS 74. FILLY, born in 1925.—PREMIUMS,

£15, £9, £6, and £4.

- 1st No. 594 Park, Robert, Brunstane, Portobello, "Brunstane Phyllis."
 2nd No. 590 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Alanna."
 3rd No. 591 Murdoch, Henry, Balgreen, Hollybush, "Balgreen Remem-
 brance."
 4th No. 592 Murray, Douglas D., The Dene, Seaham Harbour, "Winter
 Queen."
 V No. 596 Somerville, T. Purdie, Sandilands, Lanark, "Bonnie Jean."
 H No. 597 Thompson, David, Pitnacree Farm, Alyth, "Anne of Pitna-
 cree."
 C No. 587 Armstrong, J. A., The Beeches, Tarraly, Carlisle, "Lux."

CLASS 75. FILLY, born in 1926.—PREMIUMS,

£15, £9, £6, and £4.

- 1st No. 605 Paterson, Robert, Stamperland, Cathcart, Glasgow, "Lady
 M'Quaid of Stamperland."
 2nd No. 612 Templeton, T. & M., Sandyknowe, Kelso.
 3rd No. 599 Armstrong, J. A., The Beeches, Tarraly, Carlisle, "Robo-
 leine."
 4th No. 609 Roberts, H. E., Mereside, Bromfield, Carlisle, "Mereside
 Pansy."
 V No. 603 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie
 Flower Girl."
 H No. 600 Beck, George M., The Lane, Ravenstonedale, Westmorland,
 "Lane Benefactress."

(For Exhibition Only.)

The following were awarded the Silver Medal :—

SUFFOLK HORSES.

Per Suffolk Horse Society, Woodbridge, Suffolk.

- No. 613 Everett, Major Norman, Rushmere, Ipswich, Suffolk, Stallion,
"Tattingstone Beau Esprit" (4927).
No. 614 Quilter, Sir Cuthbert, Bart., Bawdsey Manor, Woodbridge, Suffolk,
Mare, "Bawdsey Porcelain" (10,404).
No. 615 Rich, Mrs Evelyn, Wretham Hall, Thetford, Norfolk, Gelding,
"Colonel."
No. 616 Sochon, T. H., Tanfield Tye, West Hanningfield, Chelmsford,
Essex, Gelding, "Boxer."

PERCHERON HORSE.

- No. 617 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, Stallion,
"Sharnden Achille" (B 233).

HUNTERS.

*PRESIDENT'S CHAMPION MEDAL for best Hunter
in Classes 76 to 84 inclusive.*

- No. 702 Hope-Johnstone, Mrs, Raehills, Lockerbie, Gelding, "Last Love."
Reserve—No. 638 Dickinson, George, Cark Mills, Cark-in-Cartmel, Filly,
"Cark Silver Sign" (6496).

**CLASS 76. HUNTER BROOD MARE, with Foal
at foot.—PREMIUMS, £15, £7, and £3.**

- 1st No. 624 Trotter, Colonel A. R., Charterhall, Duns, "Frolic II." (5234).
2nd No. 625 Trotter, Colonel A. R., Charterhall, Duns, "Alice V." (6325).
3rd No. 619 Hogarth, Mrs S. Crawford, Keppoch, Cardross, Dumbarton-
shire, "Ninon."
V No. 620 Peel, Mrs Violet, Castle Mill, Lockerbie, "Actress."
H No. 623 Thomson, A. D., Nenthorn, Kelso, "Red Tape."
C No. 618 Hignett, Fawcett, The Nook, Bankfield Road, West Derby,
Liverpool, "Flying Hornet" (6449).

EXTRA STOCK.

The following was awarded the Silver Medal :—

- No. 626 Cowan, Captain J. R. C., Kersknowe, Kelso, "Sonia III." (6627).

**CLASS 77. FOAL, any sex.—PREMIUMS,
£7, £4, and £2.**

- 1st No. 627 Cowan, Captain J. R. C., Kersknowe, Kelso, Filly, "Sonally."
2nd No. 630 Peel, Mrs Violet, Castlemilk, Lockerbie, Filly, "Vaudeville."
3rd No. 634 Trotter, Colonel A. R., Charterhall, Duns, Filly, "Gaysome"
(6849).
V No. 633 Thomson, A. D., Nenthorn, Kelso, Colt.
H No. 628 Hignett, Fawcett, The Nook, Bankfield Road, West Derby,
Liverpool, Filly.
C No. 635 Trotter, Colonel A. R., Charterhall, Duns, Colt, "Gay
Nick" (991).

Best Hunter Filly, not exceeding three years old, registered with a number in the Hunter Stud-Book, or the entry tendered within a month of the award—Champion Gold Medal, given by the Hunters' Improvement and National Light Horse Breeding Society.

No. 638 Dickinson, George, Cark Mills, Cark-in-Cartmel, Filly, "Cark Silver Sign" (6496).

Reserve—No. 665 Buchanan-Jardine, Sir John W., Bart., Castlemilk, Lockerbie, Filly, "Sepia."

**CLASS 78. FILLY or GELDING, born in 1924—
in hand.—PREMIUMS, £10, £5, and £3.**

1st No. 638 Dickinson, George, Cark Mills, Cark-in-Cartmel, Filly, "Cark Silver Sign" (6496).

2nd No. 641 Jardine, Brig.-Gen. J. B., Chesterknowes, Lilliesleaf, Gelding, "Dagobert."

3rd No. 640 Inglis, John, West Nisbet, Ancrum, Roxburghshire, Gelding, "Golden Arrow."

V No. 637 Cowan, Captain J. R. C., Kersknowe, Kelso, Gelding, "Sunny Sanday."

H No. 642 Leitch, Richard, Lennelhill, Coldstream, Gelding.

C No. 643 Leitch, Richard, Lennelhill, Coldstream, Gelding.

C No. 644 Nairn, Major R. Spencer, Leslie House, Leslie, Fife, Filly, "Gardylloo" (6454).

C No. 646 Thomson, A. D., Nenthorn, Kelso, Gelding, "Tantoro."

**CLASS 79. FILLY or GELDING, born in 1925—
in hand.—PREMIUMS, £10, £5, and £3.**

1st No. 650 Dove, G. H. J., Estate Office, Mellerstain, Gordon, Gelding, "Kelso."

2nd No. 657 Thomson, A. D., Nenthorn, Kelso, Gelding, "Simple Simon."

3rd No. 656 Straker, J. C., Stagshaw, Corbridge-on-Tyne, Gelding, "Ilston Boy."

V No. 647 Cowan, Captain J. R. C., Kersknowe, Kelso, Gelding, "Sultry Simon."

H No. 652 Jackson, Mrs H., Balnacraig, Pitlochry, Gelding, "Craigeour."

C No. 649 Davidson, Trustees of the late Gilbert, Burnfoot, Hawick, Gelding.

C No. 651 Galbraith, Mrs, The Barony, Dumfries, Gelding, "The Baron."

C No. 659 Trotter, Colonel A. R., Charterhall, Duns, Gelding, "Salvo" (992).

**CLASS 80. FILLY, COLT, or GELDING, born in
1926—in hand.—PREMIUMS, £10, £5, and £3.**

1st No. 665 Buchanan-Jardine, Sir John W., Bart., Castlemilk, Lockerbie, Filly, "Sepia."

2nd No. 660 Bell, G. F., Mindrum, Northumberland, Gelding, "Mischief."

3rd No. 668 Currie, Miss Thomson, Clatto, Cupar-Fife, Filly, "Miss Dibs" (6693).

V No. 676 Straker, J. C., Stagshaw, Corbridge-on-Tyne, Gelding.

H No. 664 Buchanan-Jardine, Sir John W., Bart., Castlemilk, Lockerbie, Filly, "Vain Air" (6738).

C No. 661 Brook, Lt.-Col. Charles, of Kinmount, Annan, Filly, "Golden Dawn."

C No. 662 Brook, Lt.-Col. Charles, of Kinmount, Annan, Filly, "Kinmount Beauty."

- C No. 669 Dalrymple, Miss Mary A., Elliston, St Boswells, Filly,
"Pandora."
C No. 672 Lindsay, Miss, Clifton Hall, Ratho, Filly.
C No. 673 Nairn, Major R. Spencer, Leslie House, Leslie, Fife, Colt,
"Cocktail."
C No. 674 Sharpe, Major R. W., of The Park, Earlston, Berwickshire,
Filly.

CLASS 81. MARE or GELDING, born before 1923, to carry 14 stone 7 lb. and upwards—*in saddle*.—PREMIUMS, £15, £10, and £5.

- 1st No. 682 Liddell-Grainger, Lady Muriel, Ayton Castle, Berwickshire,
Gelding, "Melton."
2nd No. 681 Liddell-Grainger, Lady Muriel, Ayton Castle, Berwickshire,
Gelding, "Mark Anthony."
3rd No. 678 Cooper, Miss C. M., West Glenturret, Crieff, Gelding,
"Tweeddale."
V No. 679 Dow, Thomas, Bemersyde East End, St Boswells, Gelding,
"Hornpipe."

CLASS 82. MARE or GELDING, born before 1923, to carry 13 stone and under 14 stone 7 lb.—*in saddle*.—PREMIUMS, £15, £10, and £5.

- 1st No. 687 Coats, Major J. A., M.F.H., Auchans, Dundonald, Ayrshire,
Gelding, "Waverton."
2nd No. 691 Hope-Johnstone, E. W., Raehills, Lockerbie, Gelding,
"Who."
3rd No. 686 Coats, Major J. A., M.F.H., Auchans, Dundonald, Ayrshire,
Gelding, "Merry Tom."
V No. 685 Cheape, Brig.-Gen. R., C.M.G., D.S.O., M.C., Wellfield,
Gateside, Fife, Gelding, "Longlands."
H No. 689 Galbraith, Mrs, The Barony, Dumfries, Gelding, "Foch."

CLASS 83. MARE or GELDING, born before 1923, to carry under 13 stone—*in saddle*.—PREMIUMS, £15, £10, and £5.

- 1st No. 702 Hope-Johnstone, Mrs, Raehills, Lockerbie, Gelding, "Last
Love."
2nd No. 700 Currie, Mrs Marie, Swinton House, Duns, Mare, "Change
of Luck."
3rd No. 696 Baillie, Colonel A. C., D.S.O., Harleyburn, Melrose, Gelding,
"Dormouse."
V No. 698 Coats, Major J. A., M.F.H., Auchans, Dundonald, Ayrshire,
Mare, "Cinders."
H No. 695 Anderson, James W., Rowanbank, Hawick, Mare, "Golden
Memory."
C No. 697 Cheape, Mrs R., Wellfield, Gateside, Fife, Mare, "Roma
Star."
C No. 704 Robertson, Mrs G., Sandhills, Monkton, Ayrshire, Gelding,
"Chorister."

CLASS 84. MARE or GELDING, born in 1923—*in saddle*.—PREMIUMS, £15, £10, and £5.

- 1st No. 714 Thomson, A. D., Nenthorn, Kelso, Gelding, "Kerrysdale."
2nd No. 708 Allison, John M., Overton, Kirkliston, Gelding, "The Twin."
3rd No. 709 Cheape, Brig.-Gen. R., C.M.G., D.S.O., M.C., Wellfield,
Gateside, Fife, Mare, "Greetings."
V No. 711 Dickinson, George, Cark Mills, Cark-in-Cartmel, Gelding,
"Cark Silver Star."
H No. 712 Nairn, Major R. Spencer, Leslie House, Leslie, Fife, Gelding,
"Gowk."

CLASS 85. HACK of HUNTER type, born before 1924, 15.2 hands and under—in saddle.—PREMIUMS, £8, £5, and £3.

- 1st No. 716 Currie, Mrs Marie, Swinton House, Duns, Mare, "Easter Fish."
 2nd No. 720 Robertson, George Edward, Claremont, South Lauder Road, Edinburgh, Mare, "Royal Surprise."
 3rd No. 718 Eckford, Mrs A. Herbert, Mavishaugh, St Andrews, Gelding, "Rancher."

HIGHLAND PONIES.

PRESIDENT'S CHAMPION MEDAL for best Highland Pony.

- No. 721 Board of Agriculture for Scotland, Beechwood, Inverness, Stallion, "Faillie Rover" (1142).
 Reserve—No. 724 Middleton, Lord, Applecross House, Applecross, Stallion, "Banchor Buidhe" (1191).

Special Prize of £10 for the best Highland Stallion, Mare, Colt, or Filly, entered or accepted for entry in the Highland Section of the National Pony Stud-Book, "Extra Stock" being eligible to compete—given by the National Pony Society.

- No. 721 Board of Agriculture for Scotland, Beechwood, Inverness, Stallion, "Faillie Rover" (1142).

CLASS 86. STALLION, born before 1925, not exceeding 14.2 Hands.—PREMIUMS, £8, £4, and £2.

- 1st No. 721 Board of Agriculture for Scotland, Beechwood, Inverness, "Faillie Rover" (1142).
 2nd No. 724 Middleton, Lord, Applecross House, Applecross, "Banchor Buidhe" (1191).
 3rd No. 722 Glentanar, Lord, Glen Tanar, Aberdeenshire, "Angus" (885).
 V No. 723 Mackelvie, Donald, New Lanark, Lamlash, "Ben Varen" (1422).

EXTRA STOCK.

The following was awarded the Silver Medal :—

- No. 725 Wright, J. Moncrieff, of Kinmonth, Bridge of Earn, "Glenbernesdale" (891).

CLASS 87. MARE, born before 1925, not exceeding 14.2 Hands, Yeld or with Foal at foot.—PREMIUMS, £8, £4, and £2.

- 1st No. 726 Board of Agriculture for Scotland, Beechwood, Inverness, "May Dew II." (4569).
 2nd No. 727 Board of Agriculture for Scotland, Beechwood, Inverness, "Faillie Wren" (5357).
 3rd No. 731 Mackelvie, Donald, New Lanark, Lamlash, "Bonnie Nancy" (5361).
 V No. 733 Wright, J. Moncrieff, of Kinmonth, Bridge of Earn, "Isla Ormiston" (4041).
 H No. 732 Maxwell, Miss Anne Stirling, Pollok House, Pollokshaws, "Corrour Cailleach" (4053).
 C No. 729 Macaskill, Kenneth G., Lettermore, Aros, Mull, "Veronica II." (5417).

CLASS 88. ENTIRE COLT, born on or after 1st January 1925.—PREMIUMS, £6, £4, and £2.

- 1st No. 735 Wright, J. Moncrieff, of Kinmonth, Bridge of Earn, "Tor-rish" (1474).
 2nd No. 734 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Struan Laddie" (1493).

CLASS 89. FILLY, born on or after 1st January 1925.—PREMIUMS, £6, £4, and £2.

- 1st No. 739 Nasmyth, Norman J., of Glen-Farg, Abernethy, "Violet of Glen-Farg" (5254).
 2nd No. 737 Glentamar, Lord, Glen Tanar, Aberdeenshire, "Finona."
 3rd No. 736 Board of Agriculture for Scotland, Beechwood, Inverness, "Faillie Mist."
 C No. 738 Mackelvie, Donald, New Lanark, Lamlash, "Monamore."

WESTERN ISLAND PONIES.

PRESIDENT'S CHAMPION MEDAL for best Western Island Pony.

- No. 742 Mackenzie, J. H. Munro, of Calgary, Isle of Mull, Stallion, "Pirate" (1204).
 Reserve—No. 749 Mackenzie, J. H. Munro, of Calgary, Isle of Mull, Mare, "Erisgeir" (5094).

Special Prize of £10 for the best Western Island Stallion, Mare, Colt, or Filly, entered or accepted for entry in the Highland Section of the National Pony Stud-Book, "Extra Stock" being eligible to compete—given by the Highland Pony Society.

- No. 742 Mackenzie, J. H. Munro, of Calgary, Isle of Mull, Stallion, "Pirate" (1204).

CLASS 90. STALLION, born before 1925, not exceeding 14 Hands.—PREMIUMS, £8, £4, and £2.

- 1st No. 741 Mundell, George, Tarradale, Muir of Ord, "Tarradale" (1397).
 2nd No. 740 Mackelvie, Donald, New Lanark, Lamlash, "Dunfion" (1421).

EXTRA STOCK.

The following was awarded the Silver Medal :—

- No. 742 Mackenzie, J. H. Munro, of Calgary, Isle of Mull, "Pirate" (1204).

CLASS 91. MARE, born before 1925, not exceeding 14 Hands, Yeld or with Foal at foot.—PREMIUMS, £8, £4, and £2.

- 1st No. 749 Mackenzie, J. H. Munro, of Calgary, Isle of Mull, "Erisgeir" (5094).
 2nd No. 747 Duguid, Miss H. M., Manar House, Inverurie, "Linnhe" (2971).
 3rd No. 746 Donaldson, Miss Katherine, Ballindalloch, Balforn, "Seon-aid" (5513).
 V No. 745 Cowan, Alexander, of Loganhouse, Penicuik, "Logan Calliach" (4466).
 H No. 748 Mackelvie, Donald, New Lanark, Lamlash, "Elsapie" (5365).

EXTRA STOCK.

The following was awarded the Silver Medal :—

- No. 750 Wright, J. Moncrieff, of Kinmonth, Bridge of Earn, " Isle of Arran Bonnie Jean " (4408).

CLASS 92. ENTIRE COLT, born on or after 1st January 1925.—PREMIUMS, £6, £4, and £2.

- 1st No. 753 Ross, Charles D. M., Ibert, Crieff, " Odin " (1489).
2nd No. 751 Mackenzie, J. H. Munro, of Calgary, Isle of Mull, " Deer Stalker " (1480).

CLASS 93. FILLY, born on or after 1st January 1925.—PREMIUMS, £6, £4, and £2.

- 1st No. 756 Mackenzie, J. H. Munro, of Calgary, Isle of Mull, " Innis Maree " (5496).
2nd No. 754 Duguid, Miss H. M., Manar House, Inverurie, " Maida."
3rd No. 757 Maxwell, Miss Anne Stirling, Pollok House, Pollokshaws, " Corrour Tobar."
V No. 758 Wright, J. Moncrieff, of Kinmonth, Bridge of Earn, " Fairy of Kinmonth."
H No. 755 Mackelvie, Donald, New Lanark, Lamlash, " Iorsa."

SHETLAND PONIES.

(ALL SHOWN IN HAND.)

PRESIDENT'S CHAMPION MEDAL for best Shetland Pony.

- No. 765 Mungall, William, of Transy, Dunfermline, Stallion, " Dunsmuir " (1155).
Reserve—No. 781 Duffus, Mrs Etta, Penniwells, Elstree, Herts., Yeld Mare, " Kitbliss of Penniwells " (4272).

Silver Cup for best Shetland Pony of either sex and any age, drawn from ordinary Classes—and shown in saddle—given by a past President of the Shetland Pony Stud-Book Society.

- No. 770 Straker, Miss Phyllis L., Stagshaw, Corbridge-on-Tyne, Colt, " Nomad of Balmuir."

Best Group of Shetland Ponies, consisting of one male and two females, of any age, entered in Classes 94, 95, 96, 97, and 98.—Premium, £10—given by " Four Lovers of the Breed," per Mr W. Mungall of Transy.

- Nos. 766, 773, and 781 Duffus, Mrs Etta, Penniwells, Elstree, Herts.

Silver Medal for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or eligible for entry in the Shetland Pony Stud-Book—given by the Shetland Pony Stud-Book Society.

- No. 781 Duffus, Mrs Etta, Penniwells, Elstree, Herts., Yeld Mare, " Kitbliss of Penniwells " (4272).

CLASS 94. STALLION, not exceeding 10½ Hands, born before 1924.—PREMIUMS, £8, £5, £3, and £2.

- 1st No. 765 Mungall, William, of Transy, Dunfermline, "Dunsmuir" (1155).
 2nd No. 764 Mungall, William, of Transy, Dunfermline, "Sonyad of Transy" (1105).
 3rd No. 759 Coats, Miss E. M., Corsebar, Paisley, "Haugh of Urr" (997).
 4th No. 760 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "Herakles" (1056).
 H No. 761 Duguid, Miss H. M., Manar House, Inverurie, "Encore of Earlshall" (1052).

CLASS 95. ENTIRE COLT, not exceeding 10½ Hands, born in 1924 or 1925.—PREMIUMS, £8, £5, £3, and £2.

- 1st No. 766 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "Diadem of Penniwells."
 2nd No. 769 Robertson, Mrs G., Sandhills, Monkton, Ayrshire, "Ambition of Sandhills."
 3rd No. 770 Straker, Miss Phyllis L., Stagshaw, Corbridge-on-Tyne, "Nomad of Balmuir."
 4th No. 768 Mungall, William, of Transy, Dunfermline, "Perseus of Transy."

CLASS 96. MARE, not exceeding 10½ Hands, with Foal at foot.—PREMIUMS, £8, £5, £3, and £2.

- 1st No. 773 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "Dimity" (3725).
 2nd No. 778 Mungall, William, of Transy, Dunfermline, "Felicia of Transy" (3945).
 3rd No. 774 Duguid, Miss H. M., Manar House, Inverurie, "Brindy" (3518).
 4th No. 776 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Stella."
 H No. 775 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Senga" (4070).
 C No. 772 Coats, Miss E. M., Corsebar, Paisley, "Erica of Auchlochan" (4100).
 C No. 771 Brand, Ralph Laidlaw, Burnlea Dairy, Slateford, Edinburgh, "Phyllis of Auchlochan" (3852).

CLASS 97. YELD MARE, not exceeding 10½ Hands.—PREMIUMS, £8, £5, £3, and £2.

- 1st No. 781 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "Kitbliss of Penniwells" (4272).
 2nd No. 784 Mungall, William, of Transy, Dunfermline, "Thoria of Transy."
 3rd No. 783 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Sheila."
 4th No. 786 Robertson, Mrs G., Sandhills, Monkton, Ayrshire, "Asster Annie" (4095).
 H No. 785 Ogilvie, Miss Sheila, Bonaly Tower, Colinton, "Black Beauty."
 C No. 780 Coats, Miss E. M., Corsebar, Paisley, "Maid of Shmel."
 C No. 782 Hall, Miss Delia, 45 Sciennes Road, Edinburgh, "Molly."

CLASS 98. FILLY, not exceeding 10½ Hands, born in 1924 or 1925.—PREMIUMS, £8, £5, £3, and £2.

- 1st No. 787 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "Mayfuchsia of Penniwells."
 2nd No. 793 Robertson, Mrs G., Sandhills, Monkton, Ayrshire, "Braganza."
 3rd No. 792 Mungall, William, of Transy, Dunfermline, "Bergos of Transy."
 4th No. 788 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Tansy."
 C No. 791 Mungall, William, of Transy, Dunfermline, "Saidee of Transy."

RIDING PONIES.

CLASS 99. MARE or GELDING, any age, over 12 Hands and not exceeding 14 Hands, in saddle, to be ridden by boy or girl 10 years and under 14 years of age on first day of Show.—PREMIUMS, £5, £3, and £2.

- 1st No. 798 Liddell-Grainger, Lady Muriel, Ayton Castle, Berwickshire, Mare, "Quicksilver."
 2nd No. 794 Brown, Hugh C., Westerton, Killearn, Gelding, "Sept."
 3rd No. 800 M'Kinley, Thomas, Riding School, 5A Greenhill Park, Edinburgh, Gelding, "Spider."
 V No. 801 Sharpe, Miss Ruby, The Park, Earlston, Mare, "Dolly Grey."
 H No. 795 Campbell, The Hon. Jean, Hunthill, Jedburgh, Mare, "Skerrie."
 C No. 803 Wardrop, James, 291 High Street, Kirkcaldy, Gelding, "Bobby."

CLASS 100. MARE or GELDING, any age, not exceeding 12 Hands, in saddle, to be ridden by boy or girl under 10 years of age on first day of Show.—PREMIUMS, £5, £3, and £2.

- 1st No. 802 Straker, Mrs J. C., Stagshaw House, Corbridge-on-Tyne, Northumberland, Mare, "Star of Stagshaw."
 2nd No. 804 Coats, Miss Irene, Corsebar, Paisley, Mare, "Minnie."
 3rd No. 806 Taylor, Robert, Hendersyde Park, Kelso, Gelding, "Cloud."

HORSES IN HARNESS.

PRESIDENT'S CHAMPION MEDAL for best animal in the Classes for Horses in Harness.

- No. 817 Highet, John, Curtican, Ayr, Mare, "Wensleydale Flirt" (26,109).
 Reserve—No. 816 Thomson, Robert, Cora Linn, Peckham, London, Mare, "Haddon Fascination."

The "Glasgow" Champion Challenge Cup, value £50, for best Horse in Single Harness, limited to First, Second, and Third Prize-Winners in Harness Classes, and animals entered as "Extra Stock."

- No. 817 Highet, John, Curtican, Ayr, Mare, "Wensleydale Flirt" (26,109).

CLASS 101. YELD MARE, FILLY, or GELDING, any age, in Harness, exceeding 15 Hands, driven in the ring.—PREMIUMS, £15, £10, and £5.

- 1st No. 810 Highet, John, Curtican, Ayr, Mare, "Wardhead Lady Grace" (26,389).
 2nd No. 813 Young, John W. D., 95 Harrison Road, Edinburgh, Gelding, "Tommy."
 3rd No. 811 M'Donald, George, Roedene, Larch Road, Dumbreck, Glasgow, Mare, "Duneira" (24,482).
 V No. 808 Alison, Christie, 26 West Preston Street, Edinburgh, Gelding, "Glad Eye" (13,322).
 H No. 809 Graham, John, 13-15 Bon-Accord Street, Aberdeen, Gelding, "Clyde Polonius" (9440).

CLASS 102. YELD MARE, FILLY, or GELDING, any age, in Harness, over 14 Hands and not exceeding 15 Hands, driven in the ring.—PREMIUMS, £15, £10, and £5.

- 1st No. 816 Thomson, Robert, Cora Linn, Peckham, London, Mare, "Haddon Fascination."
 2nd No. 814 M'Donald, George, Roedene, Larch Road, Dumbreck, Glasgow, Mare, "Danum Woodbine" (24,479).
 3rd No. 815 Spier, R. R., 17 Broom Park Drive, Glasgow, Mare, "Bredisholm Duchess."

CLASS 103. YELD MARE, FILLY, or GELDING, any age, not exceeding 14 Hands, driven in the ring.—PREMIUMS, £10, £5, and £3.

- 1st No. 817 Highet, John, Curtican, Ayr, Mare, "Wensleydale Flirt" (26,109).

DRAUGHT GELDINGS IN HARNESS.

CLASS 104. DRAUGHT GELDING, any age, in Harness, shown in Cart or Lorry (and driven by single driver), it being a condition that the Horse must have been regularly worked for a period of twelve weeks prior to the first day of the Show. To be exhibited on THURSDAY, 28th July. Only the Prize-Winners to take part, as required, in the Parade on Thursday—Prizes, £10, £5, £3, £2, and £1.

- 1st No. 821 Cunningham, J. & J., Limited, 35 Charlotte Street, Leith, "Sir Andrew."
 2nd No. 822 Cunningham, J. & J., Limited, 35 Charlotte Street, Leith, "Skateraw."
 3rd No. 823 Cunningham, J. & J., Limited, 35 Charlotte Street, Leith, "The Tweed."
 4th No. 820 Bruce Lindsay Brothers, Limited, 8 John's Place, Leith, "Captain."
 5th No. 531 Meiklem, William, Bennoch Park, Kirkcaldy.

JUMPING COMPETITIONS.

Champion Prize for most points in Prizes with *one horse* in Classes 1, 3, and 5—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; and Fifth Prize, one point—the money to be evenly divided in the event of a tie. Premium—£10.

Grange, F. V., Alvaston, Nantwich, "Desire," Gelding, 9½ points.

CLASS 1. HORSE or PONY, any height.—PREMIUMS, £20, £15, £10, £5, and £3.

- 1st Stirling, Captain D. A., 13th/18th Hussars, Redford, "Nancy," Mare.
- 2nd Wellburn, W. H., Skelton Manor, York, "Cuckoo," Gelding.
- 3rd Bradley, Ernest, Newton Grange, Great Ayton, "Kitty," Mare.
- 4th equal { Carnegie, R. Y., Pitcorthie, Kilconquhar, "Tarzan," Gelding.
- 5th equal { Grange, F. V., Alvaston, Nantwich, "Desire," Gelding.

CLASS 2. HORSE or PONY, any height, which has not previously won a Prize of more than £10.—PREMIUMS, £10, £8, £5, £3, and £2.

- 1st Bradley, Ernest, Newton Grange, Great Ayton, "Kitty," Mare.
- 2nd Reynard, J. N., Manuel House, Linlithgow, "Cockleroi," Gelding.
- 3rd Brown, John, Westerton, Killearn, "Violet," Mare.
- 4th Constable, Miss Marjorie, Soilzarie, Blairgowrie, "Joker," Gelding.
- 5th Carnegie, R. Y., Pitcorthie, Kilconquhar, "Tarzan," Gelding.

CLASS 3. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1.—Premiums, £20, £15, £10, £5, and £3.

- 1st Allison, Frank, Mitre Hotel, Penrith, "Nap," Gelding.
- 2nd Grange, F. V., Alvaston, Nantwich, "Desire," Gelding.
- 3rd Hirsch, Captain, 13th/18th Hussars, Redford, "Italian Girl," Mare.
- 4th Brown, Archibald, Norwood, Auchenheth, "Bawn Boy," Gelding.
- 5th Grange, F. V., Alvaston, Nantwich, "Always," Gelding.

CLASS 4. HORSE or PONY, any height.—PREMIUMS, £10, £8, £5, £3, and £2.

- 1st Grange, F. V., Alvaston, Nantwich, "Desire," Gelding.
- 2nd Stirling, Captain D. A., 13th/18th Hussars, Redford, "Norah," Mare.
- 3rd equal { French Blake, Lt. D., 13th/18th Hussars, Redford, "Jane," Mare.
- 4th equal { Grange, F. V., Alvaston, Nantwich, "Always," Gelding.
- 5th Allison, Frank, Mitre Hotel, Penrith, "Nap," Gelding.

CLASS 5. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 3—4 inches extra for the winner of the two first prizes in Classes 1 and 3.—PREMIUMS, £15, £10, £5, £3, and £2.

- 1st Carnegie, R. Y., Pitcorthie, Kilconquhar, "Tarzan," Gelding.
- 2nd Grange, F. V., Alvaston, Nantwich, "Desire," Gelding.
- 3rd Hirsch, Captain, 13th/18th Hussars, Redford, "Italian Girl," Mare.
- 4th Stirling, Captain D. A., 13th/18th Hussars, Redford, "Norah," Mare.
- 5th Dickinson, George, Cark-in-Cartmel, Lancashire, "Cark Silver Ash," Mare.

SHEEP

BLACKFACE.

*PRESIDENT'S CHAMPION MEDAL for best animal of
Blackface Breed.*

No. 837 Mitchell, William, Hazelside, Douglas, "Sir Walter."
Reserve—No. 844 Cadzow, Charles, Weston, Dunsyre, Carstairs.

CLASS 105. TUP above one Shear.—PREMIUMS, £12, £8, £4, and £2.

1st No. 837	Mitchell, William, Hazelside, Douglas, "Sir Walter."
2nd No. 842	Paton, Robert C., Lettre, Killearn, "Sir William."
3rd No. 832	Hamilton, Matthew G., Woolfords, Cobbinshaw.
4th No. 833	Hamilton, Matthew G., Woolfords, Cobbinshaw.
V No. 824	Anderson, W. W., Colzium, Kirknewton, "Earl of Home."
H No. 825	Cadzow, Charles, Weston, Dunsyre, Carstairs.
C No. 834	Hamilton, Matthew G., Woolfords, Cobbinshaw.
C No. 838	Mitchell, William, Hazelside, Douglas.

CLASS 106. SHEARLING TUP.—PREMIUMS, £12, £8, £4, and £2.

1st No. 844	Cadzow, Charles, Weston, Dunsyre, Carstairs.
2nd No. 857	Hamilton, Matthew G., Woolfords, Cobbinshaw.
3rd No. 859	Hamilton, Matthew G., Woolfords, Cobbinshaw.
4th No. 846	Cadzow, Charles, Weston, Dunsyre, Carstairs.
V No. 865	Mitchell, William, Hazelside, Douglas.
H No. 866	Mitchell, William, Hazelside, Douglas.
C No. 845	Cadzow, Charles, Weston, Dunsyre, Carstairs.
C No. 853	Crosswoodhill Co., Crosswoodhill, West Calder.
C No. 854	Crosswoodhill Co., Crosswoodhill, West Calder.
C No. 861	Hamilton, Matthew G., Woolfords, Cobbinshaw.

CLASS 107. SHEARLING TUP, which shall have been entirely out- wintered, and not housed or house-fed at any time, and not clipped before 21st May 1927.—PREMIUMS, £12, £8, £4, and £2.

1st No. 892	Novar Estates, Limited, Novar, Evanton, Ross-shire.
2nd No. 890	Novar Estates, Limited, Novar, Evanton, Ross-shire.
3rd No. 878	Dalziel, Ralph Kennedy, Overshiels, Stow.
4th No. 889	Novar Estates, Limited, Novar, Evanton, Ross-shire.
V No. 887	Lindsay, Thomas, Ascreavie, Kirriemuir.
H No. 893	Novar Estates, Limited, Novar, Evanton, Ross-shire.
C No. 872	Anderson, W. W., Colzium, Kirknewton.
C No. 874	Cayley, Arthur, West Ditchburn, Alnwick.
C No. 879	Dalziel, Ralph Kennedy, Overshiels, Stow.
C No. 891	Novar Estates, Limited, Novar, Evanton, Ross-shire.

CLASS 108. TUP LAMB.—PREMIUMS, £5, £3, and £2.

- 1st No. 898 Cadzow, Thomas, The Greens, Carnwath.
 2nd No. 897 Cadzow, Thomas, The Greens, Carnwath.
 3rd No. 895 Anderson, W. W., Colzium, Kirknewton.
 V No. 896 Anderson, W. W., Colzium, Kirknewton.
 H No. 903 Monkhouse, Octavius, Cowhill, Wearhead, Co. Durham.
 C No. 902 Mitchell, William, Hazelside, Douglas.
 C No. 904 Rottenburg, F. A., Lochlane, Crieff.

CLASS 109. EWE, above one Shear, with her Lamb at foot.—PREMIUMS, £10, £5, and £2.

- 1st No. 908 Craig, William, Fallside, Lamington.
 2nd No. 921 Robson, John, Newton, Tarsset, North Tyne.
 3rd No. 906 Cadzow, Thomas, The Greens, Carnwath.
 V No. 907 Cayley, Arthur, West Ditchburn, Alnwick, "Lady Lindsay."
 H No. 920 Robson, John, Newton, Tarsset, North Tyne, "Fair Maid."
 C No. 905 Cadzow, Thomas, The Greens, Carnwath.
 C No. 912 Hamilton, Robert, Pool, Carnwath.

CLASS 110. SHEARLING EWE or GIMMER.—PREMIUMS, £10, £5, and £2.

- 1st No. 923 Anderson, W. W., Colzium, Kirknewton, "Nancy Stair."
 2nd No. 933 Lindsay, Thomas, Ascreavie, Kirriemuir.
 3rd No. 934 Lindsay, Thomas, Ascreavie, Kirriemuir.
 V No. 940 Robson, John, Newton, Tarsset, North Tyne.
 H No. 929 Dobson, William, Macbiehill, Lamancha, Peeblesshire.
 C No. 928 Crosswoodhill Co., Crosswoodhill, West Calder.
 C No. 935 M'Laren, James, Cornton, Bridge of Allan.

CHEVIOT.**PRESIDENT'S CHAMPION MEDAL for best animal of the Cheviot Breed.**

- No. 963 Elliot, John, Blackhaugh, Clovenfords.
Reserve—No. 1029 Thorburn & Grieve, Glenormiston, Innerleithen.

Perpetual Challenge Cup, value £25, gifted by Mr J. Borthwick, for best Sheep in the Cheviot Classes—given by Cheviot Sheep Society.

- No. 963 Elliot, John, Blackhaugh, Clovenfords.

CLASS 111. TUP above one Shear.—PREMIUMS, £12, £8, £4, and £2.

- 1st No. 949 Elliot, Robert T., Chatto, Kelso.
 2nd No. 946 Elliot, Arthur, Hindhope, Jedburgh, "Chief."
 3rd No. 948 Elliot, Robert T., Chatto, Kelso.
 4th No. 947 Elliot, Frank J., Crunklaw, Duns, "Wat Tamson."
 V No. 952 Hogg, William, Newlands, Gifford.
 H No. 953 Hogg, William, Newlands, Gifford.
 C No. 945 Elliot, Arthur, Hindhope, Jedburgh, "Borderline."

CLASS 112. SHEARLING TUP.—PREMIUMS,
£12, £8, £4, and £2.

- 1st No. 963 Elliot, John, Blackhaugh, Clovenfords.
 2nd No. 974 Hogg, George, Penmanshiel, Grantshouse, " Rising Tide."
 3rd No. 962 Elliot, Frank J., Crunklaw, Duns.
 4th No. 973 Hogg, George, Penmanshiel, Grantshouse, " High Tide."
 V No. 967 Elliot, Robert T., Chatto, Kelso.
 H No. 982 Thomson, Messrs, Bushelhill, Cockburnspath.
 C No. 964 Elliot, John, Blackhaugh, Clovenfords.
 C No. 983 Thomson, Messrs, Bushelhill, Cockburnspath.
 C No. 987 Thorburn & Grieve, Glenormiston, Innerleithen.

CLASS 113. TUP LAMB.—PREMIUMS, £5, £3, and £2.

- 1st No. 1000 Hogg, George, Penmanshiel, Grantshouse.
 2nd No. 997 Elliot, Thomas R., Attonburn, Kelso.
 3rd No. 1004 Linton, George, Pathhead, Dunbar.
 V No. 992 Elliot, Frank J., Crunklaw, Duns.
 H No. 994 Elliot, John, Blackhaugh, Clovenfords.
 C No. 991 Elliot, Arthur, Hindhope, Jedburgh.
 C No. 1009 Spence, A. G., Longyester, Gifford.

CLASS 114. EWE, above one Shear, with her Lamb
at foot.—PREMIUMS, £10, £5, and £2.

- 1st No. 1029 Thorburn & Grieve, Glenormiston, Innerleithen.
 2nd No. 1021 Hogg, William, Newlands, Gifford.
 3rd No. 1023 Mathison, William, & Sons, Shoestanes, Heriot.
 V No. 1022 Hogg, William, Newlands, Gifford.
 H No. 1030 Thorburn & Grieve, Glenormiston, Innerleithen.
 C No. 1025 Robson, John, Millknowe, Duns.
 C No. 1017 Elliot, Robert T., Chatto, Kelso.
 C No. 1028 Thomson, Messrs, Bushelhill, Cockburnspath, " Snowflake."

CLASS 115. SHEARLING EWE or GIMMER.—
PREMIUMS, £10, £5, and £2.

- 1st No. 1038 Elliot, John, Blackhaugh, Clovenfords.
 2nd No. 1035 Elliot, Arthur, Hindhope, Jedburgh.
 3rd No. 1052 Thomson, Messrs, Bushelhill, Cockburnspath.
 V No. 1041 Elliot, Thomas R., Attonburn, Kelso.
 H No. 1034 Elliot, Arthur, Hindhope, Jedburgh.
 C No. 1037 Elliot, John, Blackhaugh, Clovenfords.
 C No. 1050 Robson, John, Newton, Tarsset, North Tyne.

BORDER LEICESTER.**PRESIDENT'S CHAMPION MEDAL for best animal of Border**
Leicester Breed.

No. 1064 Cross, Thomas, Knockdon Farm, Maybole.

Reserve—No. 1119 Young, John, Skerrington Mains, Hurlford, B 2
(BL 255).

Gold Medal for best Male animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as " Extra Stock " not eligible. Given by the Society of Border Leicester Sheep-Breeders.

No. 1064 Cross, Thomas, Knockdon Farm, Maybole.

CLASS 116. TUP, above one Shear.—PREMIUMS,
£12, £8, £4, and £2.

- 1st No. 1059 Mitchell, William, Smailholm Farm, Kelso, "Copyist" (7186).
 2nd No. 1057 Kinnaird, John, Papple, Haddington, "Gay Robert" (6921).
 3rd No. 1061 Stewart, John, of Struthers, Woodburne House, Ceres, Cupar-Fife, "Dunira James" (6883).
 H No. 1058 Melrose, Adam J., Heavyside, Biggar, "Bank Favourite" (6812).

CLASS 117. SHEARLING TUP.—PREMIUMS,
£12, £8, £4, and £2.

- 1st No. 1064 Cross, Thomas, Knockdon Farm, Maybole.
 2nd No. 1084 Niven, Alexander, Ayton, Newburgh, Fife.
 3rd No. 1066 Dickinson, R. & W. B., Longcroft, Oxtou, Berwickshire.
 4th No. 1085 Niven, Alexander, Ayton, Newburgh, Fife.
 V No. 1074 Kinnaird, John, Papple, Haddington.
 H No. 1077 Macbeth, W. Gilchrist, Dunira, Comrie.
 C No. 1068 Dickinson, R. & W. B., Longcroft, Oxtou, Berwickshire.
 C No. 1071 Elliot, Frank J., Crunklaw, Duns.
 C No. 1076 Macbeth, W. Gilchrist, Dunira, Comrie.
 C No. 1079 Melrose, Adam J., Heavyside, Biggar.

CLASS 118. TUP LAMB.—PREMIUMS, £5, £3, and £2.

- 1st No. 1093 Howie, James, Hillhouse, Kilmarnock.
 2nd No. 1100 Niven, Alexander, Ayton, Newburgh, Fife.
 3rd No. 1096 Howie, James, Hillhouse, Kilmarnock.
 V No. 1091 Dickinson, R. & W. B., Longcroft, Oxtou, Berwickshire.
 H No. 1098 Macbeth, W. Gilchrist, Dunira, Comrie.
 C No. 1094 Howie, James, Hillhouse, Kilmarnock.

Gold Medal for best Female animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible. Given by the Society of Border Leicester Sheep-Breeders.

- No. 1119 Young, John, Skerrington Mains, Hurlford, B 2 (BL 255).

CLASS 119. EWE, above one Shear.—PREMIUMS,
£10, £5, and £2.

- 1st No. 1119 Young, John, Skerrington Mains, Hurlford, B 2 (BL 255).
 2nd No. 1108 Cross, Thomas, Knockdon Farm, Maybole.
 3rd No. 1117 Stewart, Robert C., Newton Farm, Millerhill, Dalkeith.
 V No. 1116 Stewart, John, of Struthers, Woodburne House, Ceres, Cupar-Fife.
 H No. 1115 Melrose, Adam J., Heavyside, Biggar.
 C No. 1110 Dickinson, R. & W. B., Longcroft, Oxtou, Berwickshire.

CLASS 120. SHEARLING EWE or GIMMER.—
PREMIUMS, £10, £5, and £2.

- 1st No. 1130 Melrose, Adam J., Heavyside, Biggar, C 37 (BL 821).
 2nd No. 1136 Niven, Alexander, Ayton, Newburgh, Fife.
 3rd No. 1135 Niven, Alexander, Ayton, Newburgh, Fife.
 V No. 1120 Brown, Alexander, Sandyknowe, Kelso.
 H No. 1133 Murray, R. G., & Son, Spittal, Biggar.
 C No. 1138 Stewart, John, of Struthers, Woodburne House, Ceres, Cupar-Fife.

HALF-BRED.*PRESIDENT'S CHAMPION MEDAL for best Half-bred Animal.*

No. 1151 Hogg, Adam, Duncanlaw, Gifford.

Reserve—No. 1178 Elliot, Frank J., Crunklaw, Duns.

CLASS 121. TUP, above one Shear.—PREMIUMS,
£10, £7, and £3.

1st No. 1143 Turnbull, James A., & Son, Roddam Rigg, Alnwick.

CLASS 122. SHEARLING TUP.—PREMIUMS,
£10, £7, and £3.

1st No. 1151 Hogg, Adam, Duncanlaw, Gifford.

2nd No. 1150 Hogg, Adam, Duncanlaw, Gifford.

3rd No. 1147 Elliot, Frank J., Crunklaw, Duns.

V No. 1146 Elliot, Frank J., Crunklaw, Duns.

H No. 1148 Elliot, John, Blackhaugh, Clovenfords.

C No. 1145 Armstrong, Thomas, East Cote, Hawick.

CLASS 123. EWE, above one Shear.—PREMIUMS,
£10, £5, and £2.

1st No. 1157 Brown, John C., Hundalee, Jedburgh.

2nd No. 1158 Elder, Hugh, Bughtknowe, Humble, East Lothian.

3rd No. 1155 Armstrong, Thomas, East Cote, Hawick.

V No. 1161 Spence, A. G., Longyester, Gifford.

H No. 1156 Armstrong, Thomas, East Cote, Hawick.

C No. 1160 Smith, Will, Rutherford, Roxburgh.

CLASS 124. SHEARLING EWE or GIMMER.
—PREMIUMS, £10, £5, and £2.

1st No. 1168 Elder, Hugh, Bughtknowe, Humble, East Lothian.

2nd No. 1164 Allan, Thomas, Georgefield, Earlstoun.

3rd No. 1167 Brown, John C., Hundalee, Jedburgh.

V No. 1165 Brown, Alexander, Sandyknowe, Kelso.

H No. 1166 Brown, John C., Hundalee, Jedburgh.

C No. 1162 Allan, Thomas, Georgefield, Earlstoun.

CLASS 125. THREE EWE LAMBS.—PREMIUMS,
£5, £3, and £2.

1st No. 1178 Elliot, Frank J., Crunklaw, Duns.

2nd No. 1179 Elliot, Frank J., Crunklaw, Duns.

3rd No. 1182 Hogg, William, Newlands, Gifford.

V No. 1180 Hogg, Adam, Duncanlaw, Gifford.

H No. 1184 Stewart, Representatives of the late J. M., Stoneypath,
Stenton, Prestonkirk.

C No. 1175 Allan, Thomas, Georgefield, Earlstoun.

OXFORD-DOWN.**PRESIDENT'S CHAMPION MEDAL** *for best Oxford-Down Animal.*

No. 1206 Templeton, T. & M., Sandyknowe, Kelso.

Reserve—No. 1217 Templeton, T. & M., Sandyknowe, Kelso.

Scottish Oxford-Down Sheep-Breeders' Challenge Bowl, value £50, *for the best Oxford-Down Animal bred in Scotland*—given by Oxford-Down Sheep-Breeders' Association.

No. 1206 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 126. SHEARLING TUP.—PREMIUMS,
£8, £5, and £3.

1st No. 1198 Templeton, T. & M., Sandyknowe, Kelso.

2nd No. 1187 Forrest, Robert, jun., Stuartsław, Edrom.

3rd No. 1197 Malcolm, William T., Whittingehame Mains, Haddington,
"Scottie" (11,383).

V No. 1199 Templeton, T. & M., Sandyknowe, Kelso.

H No. 1192 Harrison, J. & R., Gainford Hall, Gainford.

C No. 1188 Graham, R. & J., Kaimflat, Kelso.

C No. 1190 Graham, R. & J., Kaimflat, Kelso.

C No. 1194 Malcolm, William M., Softlaw, Kelso, "Evander" (11,362).

CLASS 127. SHEARLING EWE or GIMMER.—
PREMIUMS, £8, £5, and £3.

1st No. 1206 Templeton, T. & M., Sandyknowe, Kelso.

2nd No. 1208 Templeton, T. & M., Sandyknowe, Kelso.

3rd No. 1207 Templeton, T. & M., Sandyknowe, Kelso.

V No. 1202 Graham, R. & J., Kaimflat, Kelso.

H No. 1205 Malcolm, William M., Softlaw, Kelso.

C No. 1203 Ireland, H. B., Ballindean, Kilmany, Dundee.

CLASS 128. TUP LAMB.—PREMIUMS, £8, £5, and £3.

1st No. 1217 Templeton, T. & M., Sandyknowe, Kelso.

2nd No. 1218 Templeton, T. & M., Sandyknowe, Kelso.

3rd No. 1216 Malcolm, William T., Whittingehame Mains, Haddington.

V No. 1210 Graham, R. & J., Kaimflat, Kelso.

H No. 1213 Ireland, H. B., Ballindean, Kilmany, Dundee.

C No. 1219 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 129. THREE EWE LAMBS.—PREMIUMS,
£8, £5, and £2.

1st No. 1223 Templeton, T. & M., Sandyknowe, Kelso.

2nd No. 1222 Malcolm, William M., Softlaw, Kelso.

3rd No. 1220 Graham, R. & J., Kaimflat, Kelso.

SUFFOLK.

PRESIDENT'S CHAMPION MEDAL for best Suffolk Animal.

No. 1276 Rintoul, William, Kilmux, Leven.

Reserve—No. 1275 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorks.

CLASS 130. TUP, one Shear and over.—PREMIUMS,
£8, £5, and £3.

1st No. 1230 Stodart, Charles, Leaston, Humbie, "Walton Eagle Eye" (19,908).

2nd No. 1229 Rintoul, William, Kilmux, Leven, "Southburn Chancellor" (19,843).

3rd No. 1227 Hutton, Duncan F., Gibliston, Kilconquhar, "Kilmux Darling" (19,675).

V No. 1226 Golightly, William, Whitelaw, Haddington, "Walton Copyright" (19,612).

H No. 1231 Taylor, J. P. Ross, Mungos Walls, Duns, "Goodson."

C No. 1228 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorks., "Playford Prince III." (19,827).

CLASS 131. SHEARLING EWE or GIMMER.—
PREMIUMS, £8, £5, and £3.

1st No. 1239 Rintoul, William, Kilmux, Leven.

2nd No. 1232 Brook, Lieut.-Colonel Charles, of Kinmount, Annan.

3rd No. 1233 Brook, Lieut.-Colonel Charles, of Kinmount, Annan.

V No. 1237 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorks.

H No. 1240 Rintoul, William, Kilmux, Leven.

C No. 1235 Laing, Thomas, Harrietfield, Kelso.

CLASS 132. TUP LAMB.—PREMIUMS, £8, £5, and £3.

1st No. 1262 Rintoul, William, Kilmux, Leven.

2nd No. 1250 Duncan, Commander J. A., Magungie, Arbroath.

3rd No. 1261 Rintoul, William, Kilmux, Leven.

V No. 1249 Duncan, Commander J. A., Magungie, Arbroath.

H No. 1259 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorks.

C No. 1252 Duncan, Commander J. A., Magungie, Arbroath.

CLASS 133. THREE EWE LAMBS.—PREMIUMS,
£8, £5, and £2.

1st No. 1275 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorks.

2nd No. 1276 Rintoul, William, Kilmux, Leven.

3rd No. 1271 Duncan, Commander J. A., Magungie, Arbroath.

V No. 1273 Laing, Thomas, Harrietfield, Kelso.

H No. 1272 Golightly, William, Whitelaw, Haddington.

C No. 1278 Taylor, J. P. Ross, Mungos Walls, Duns.

SHROPSHIRE.*PRESIDENT'S CHAMPION MEDAL for best Shropshire Animal.*

No. 1280 Buttar, Thomas A., Corston, Coupar-Angus.

Reserve—No. 1285 Buttar, Thomas A., Corston, Coupar-Angus.**CLASS 134. SHEARLING TUP.**—PREMIUMS,
£6, £4, and £2.

1st No. 1280 Buttar, Thomas A., Corston, Coupar-Angus.

2nd No. 1281 Buttar, Thomas A., Corston, Coupar-Angus.

3rd No. 1282 Buttar, Thomas A., Corston, Coupar-Angus.

V No. 1283 Buttar, Thomas A., Corston, Coupar-Angus.

C No. 1284 Grimond, John, Lornty Farm, Blairgowrie, "Kingcup."

CLASS 135. SHEARLING EWE or GIMMER.—
PREMIUMS, £5, £3, and £2.

1st No. 1285 Buttar, Thomas A., Corston, Coupar-Angus.

2nd No. 1287 Buttar, Thomas A., Corston, Coupar-Angus.

3rd No. 1286 Buttar, Thomas A., Corston, Coupar-Angus.

C No. 1288 Grimond, John, Lornty Farm, Blairgowrie, "Meadow Queen."

DORSET HORN.*PRESIDENT'S CHAMPION MEDAL for best Dorset Horn Animal.*

No. 1290 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, "Symondsbury No. 390" (5462).

Reserve—No. 1289 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, "Broomhall No. 3" (5100).**CLASS 136. TUP, any age.**—PREMIUMS, £6, £4, and £2.

1st No. 1290 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, "Symondsbury No. 390" (5462).

2nd No. 1289 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, "Broomhall No. 3" (5100).

3rd No. 1291 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.

V No. 1292 Graham, James A., Laracen Farm, Kippen Station, "Broomhall No. 2" (4888).

C No. 1293 Novar Estates, Limited, Raith, Kirkcaldy.

**CLASS 137. EWE or GIMMER.—PREMIUMS,
£5, £3, and £2.**

- 1st No. 1298 Elgin and Kincardine, The Earl of, C.M.G., Broomhall,
Dunfermline.
2nd No. 1299 Elgin and Kincardine, The Earl of, C.M.G., Broomhall,
Dunfermline.
3rd No. 1295 Beveridge, Charles H., Elphinstone Tower, Tranent.
V No. 1297 Elgin and Kincardine, The Earl of, C.M.G., Broomhall,
Dunfermline.
H No. 1296 Beveridge, Charles H., Elphinstone Tower, Tranent.
C No. 1301 Novar Estates, Limited, Raith, Kirkcaldy.

FAT SHEEP.**CLASS 138., THREE FAT LAMBS, any Breed or Cross, dropped
in the year of the Show.—PREMIUMS, £5, £3, and £2.**

- 1st No. 1303 Beveridge, Charles H., Elphinstone Tower, Tranent (Suffolk
Tup and Half-bred Ewes).
2nd No. 1302 Beveridge, Charles H., Elphinstone Tower, Tranent (Hamp-
shire Tup and Blackface Cross Ewes).
3rd No. 1315 Wilson, Stewart, Capielaw, Rosewell (Suffolk).
V No. 1305 Crawford, William, Hatton Mains, Kirknewton (Suffolk
Tup and Border Leicester-Blackface Cross Ewes).
H No. 1307 Elgin and Kincardine, The Earl of, C.M.G., Broomhall,
Dunfermline (Dorset Down Tup and Border Leicester-
Dorset Horn Cross Ewes).
C No. 1308 Elgin and Kincardine, The Earl of, C.M.G., Broomhall,
Dunfermline (Dorset Horn).

**CLASS 139. THREE FAT LAMBS, out of Blackface Ewes, dropped
in the year of the Show.—PREMIUMS, £5, £3, and £2.**

- 1st No. 1316 Wilson, Stewart, Capielaw, Rosewell (Border Leicester
Tup).

GOATS

*PRESIDENT'S CHAMPION MEDAL for best Animal
in the Goat Classes.*

- No. 1350 Henderson, Miss Marjorie, The Riding, Hexham (Anglo-Nubian Swiss), "Riding Topaz" (5816).
Reserve—No. 1351 Swan, Miss Elinor, Swanston Cottage, Colinton, Mid-Lothian (Toggenburg Type), "Charité" (KR 8968).

The Competition for Goats is recognised by the British Goat Society, which will give Challenge Certificates (qualifying for a Championship):—

For the best Male Goat over one year.

- No. 1320 Cameron, Mrs Allan, Darris, Dores, Inverness (Anglo-Nubian Toggenburg), "Ivanhoe of Buchanan" (HB 7493).

For the best Female Goat over two years that has borne a kid.

- No. 1350 Henderson, Miss Marjorie, The Riding, Hexham (Anglo-Nubian Swiss), "Riding Topaz" (5816).

For the best dual purpose Goat over two years that has borne a kid.

- No. 1342 Monaghan, Thomas, Windsor Cottage, Cambuskenneth, Stirling (Swiss-Irish), "Daisybelle Q*" (FB 170).

A Breed Challenge Certificate for the best Anglo-Nubian Female Goat over two years that has borne a kid.

- No. 1330 Macdonald, Mrs Sydney, Garrochty, Kingarth, Isle of Bute, "Theydon Brenda" (AN 1665).

A Bronze Medal for the best Male exhibit in Classes 140, 141, and 142.

- No. 1320 Cameron, Mrs Allan, Darris, Dores, Inverness (Anglo-Nubian Toggenburg), "Ivanhoe of Buchanan" (HB 7493).

A Bronze Medal for the best Female exhibit in Classes 143, 144, 145, and 146.

- No. 1350 Henderson, Miss Marjorie, The Riding, Hexham (Anglo-Nubian Swiss), "Riding Topaz" (5816).

Challenge Cup, value 20 Guineas, for the best Female Goat in the Show—given by Lord Dewar, London.

- No. 1350 Henderson, Miss Marjorie, The Riding, Hexham (Anglo-Nubian Swiss), "Riding Topaz" (5816).

Reserve—No. 1351 Swan, Miss Elinor, Swanston Cottage, Colinton, Mid-Lothian (Toggenburg Type), "Charité" (KR 8968).

Challenge Cup, value £10, for best Female Anglo-Nubian Goat over two years old, in milk, entered in the Anglo-Nubian Section of the Herd-Book, "Extra Stock" being eligible to compete—given by Mrs S. Macdonald, Garrochty.

- No. 1330 Macdonald, Mrs Sydney, Garrochty, Kingarth, Isle of Bute, "Theydon Brenda" (AN 1665).

CLASS 140. MALE GOAT, any Variety, over two years.—PREMIUMS, £3, £2, and £1.

- 1st No. 1318 Blair, Mrs W. E., Foulden Goat Farm, Foulden, Berwick-on-Tweed (British-Saanen), "Sambarena" (737 6).
 2nd No. 1317 Animal Breeding Research Department, West Mains, Edinburgh (Toggenburg), "†Fryston Straitlace" (T 568).

CLASS 141. MALE GOAT, any Variety, over one but not exceeding two years.—PREMIUMS, £3, £2, and £1.

- 1st No. 1320 Cameron, Mrs Allan, Darris, Dores, Inverness (Anglo-Nubian-Toggenburg), "Ivanhoe of Buchanan" (HB 7493).
 2nd No. 1321 Forteviot, Lady, Dupplin Castle, Perth (British Alpine), "†Didgemere Demon" (7591).
 3rd No. 1322 Macdonald, Mrs Sydney, Garrochty, Kingarth, Isle of Bute, (Anglo-Nubian), "†Theydon Rufus" (AN 1755).
 V No. 1319 Animal Breeding Research Department, West Mains, Edinburgh (Toggenburg), "Cornish Berlace" (T 614).

CLASS 142. MALE KID, any Variety, not exceeding one year.—PREMIUMS, £3, £2, and £1.

- 1st No. 1325 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Danny" (8077).
 2nd No. 1327 Wallace, Mrs, Nethermoss, Rumbling Bridge (British Toggenburg), "Undaunted" (SR 424).
 3rd No. 1323 Animal Breeding Research Department, West Mains, Edinburgh (Anglo-Nubian), "Brigand" (AN 1819).
 V No. 1326 Forteviot, Lady, Dupplin Castle, Perth (British-Toggenburg), "Dupplin Dennis" (8078).
 H No. 1324 Blair, Mrs W. E., Foulden Goat Farm, Foulden, Berwick-on-Tweed (Anglo-Swiss Saanen), "Foulden Jockie" (HB 8096).

CLASS 143. FEMALE GOAT, Anglo-Nubian, in Milk.—PREMIUMS, £3, £2, and £1.

- 1st No. 1330 Macdonald, Mrs Sydney, Garrochty, Kingarth, Isle of Bute, "Theydon Brenda" (AN 1665).
 2nd No. 1328 Animal Breeding Research Department, West Mains, Edinburgh, "Lunesdale Bramble" (AN 1496).
 3rd No. 1329 Animal Breeding Research Department, West Mains, Edinburgh, "Theydon Brazilla" (AN 1642).

CLASS 144. FEMALE GOAT, any other Variety, in Milk.—PREMIUMS, £3, £2, and £1.

- 1st No. 1338 Forteviot, Lady, Dupplin Castle, Perth (British Alpine), "Dupplin Darling" (6957).
 2nd No. 1339 Forteviot, Lady, Dupplin Castle, Perth (British Toggenburg), "Dupplin Dusk" (7017).
 3rd No. 1337 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Dulcie" (6964).
 V No. 1343 Rotherford, Mrs R. W., The Pines Poultry Farm, Ponteland, Northumberland (Anglo-Nubian Swiss), "Riding Tinker Belle" (6423).
 H No. 1349 Wallace, Mrs, Nethermoss, Rumbling Bridge (Anglo-Nubian Swiss), "Electra" (SR 410).
 C No. 1340 Henderson, Miss Marjorie, The Riding, Hexham (British Alpine), "Riding Thistledown" (5318).
 C No. 1345 Straker, Mrs John C., Stagshaw House, Corbridge-on-Tyne (Toggenburg Anglo-Swiss Saanen), "Leazes Fidelia *Q**" (4425).

EXTRA STOCK.

The following was awarded the Silver Medal :—

- No. 1350 Henderson, Miss Marjorie, The Riding, Hexham (Anglo-Nubian Swiss), "Riding Topaz" (5816).

The following was awarded the Medium Silver Medal :—

- No. 1351 Swan, Miss Elinor, Swanston Cottage, Colinton, Mid-Lothian (Toggenburg Type), "Charité" (KR 8968).

CLASS 145. GOATLING, any Variety, over one but not exceeding two years.—PREMIUMS, £3, £2, and £1.

- 1st No. 1356 Henderson, Miss Marjorie, The Riding, Hexham (British Alpine), "Riding Thistlebud" (7523).
 2nd No. 1358 Macdonald, Mrs Sydney, Garrochty, Kingarth, Isle of Bute (Anglo-Nubian), "Theydon Buttercup" (AN 1781).
 3rd No. 1357 Macdonald, Mrs Sydney, Garrochty, Kingarth, Isle of Bute (Anglo-Nubian), "Wells Pomond" (AN 1730).
 V No. 1359 Rotherford, Mrs R. W., The Pines Poultry Farm, Ponteland, Northumberland (Anglo-Nubian Swiss), "Dissington Mischief" (7635).
 H No. 1360 Wallace, Mrs, Nethermoss, Rumbling Bridge (British Saanen), "Birkie" (HB 7426).
 C No. 1353 Animal Breeding Research Department, West Mains, Edinburgh (British Toggenburg), "Cornish Penitence" (7849).

CLASS 146. FEMALE KID, any Variety, not exceeding one year.—PREMIUMS, £3, £2, and £1.

- 1st No. 1372 Macdonald, Mrs Sydney, Garrochty, Kingarth, Isle of Bute (British Alpine), "Didgemere."
 2nd No. 1375 Rotherford, Mrs R. W., The Pines Poultry Farm, Ponteland, Northumberland (Anglo-Nubian Swiss), "Didgemere Marvel" (HB 8112).
 3rd No. 1369 Forteviot, Lady, Dupplin Castle, Perth (British Alpine), "Dupplin Delight" (8080).
 V No. 1367 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Dream" (8082).
 H No. 1368 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Dahlia" (8079).
 C No. 1366 Blair, Mrs W. E., Foulden Goat Farm, Foulden, Berwick-on-Tweed (Anglo-Swiss), "Didgemere Marion" (HB 8095).
 C No. 1377 Swan, Miss Elinor, Swanston Cottage, Colinton, Mid-Lothian (Toggenburg Type), "Beauty of Swanston" (SR 474).

CLASS 147. MILKING COMPETITION, open to Classes 143 and 144. The Milk yielded by Goats in this Class shall be the property of the Society.—PREMIUMS, £3, £2, and £1.

- 1st No. 1342 Monaghan, Thomas, Windsor Cottage, Cambuskenneth; Stirling (Swiss-Irish), "Daisybelle Q*" (FB 170).
 2nd No. 1338 Forteviot, Lady, Dupplin Castle, Perth (British Alpine), "Dupplin Darling" (6957).
 3rd No. 1349 Wallace, Mrs, Nethermoss, Rumbling Bridge (Anglo-Nubian Swiss), "Electra" (SR 410).

PIGS

LARGE WHITE.

PRESIDENT'S CHAMPION MEDAL for best Large White Pig.

No. 1383 Haig, Alastair N., Springfield Farm, Kinross, " Bourne Broker 21st " (52,293).

Reserve—No. 1431 Thomlinson, E., Hutton Wandesley, Marston, York, " Packwood Princess Pat 4th."

Renfrewshire Perpetual Gold Challenge Cup, value £250, *for best Large White Pig, "Extra Stock" being eligible to compete.* This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir MacKean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrew in 1913.

No. 1383 Haig, Alastair N., Springfield Farm, Kinross, " Bourne Broker 21st " (52,293).

Reserve—No. 1431 Thomlinson, E., Hutton Wandesley, Marston, York, " Packwood Princess Pat 4th."

Gold Medal, value £5, *for the best Large White Pig in the Show*—given by the National Pig-Breeders' Association.

No. 1383 Haig, Alastair N., Springfield Farm, Kinross, " Bourne Broker 21st " (52,293).

CLASS 148. BOAR, born before 1926.—PREMIUMS,
£8, £4, and £2.

1st No. 1383 Haig, Alastair N., Springfield Farm, Kinross, " Bourne Broker 21st " (52,293).

2nd No. 1385 Morgan, J. Pierpont, Wall Hall, Watford, Herts., " Aldenham Brigadier."

3rd No. 1382 Douglas, Mrs A. I., Auchlochan, Lesmahagow, " Wentworth Lion 23rd " (53,973).

V No. 1381 Cowper, John E. B., Gogar Mains, Corstorphine, " Wentworth Lion 21st " (53,969).

C No. 1380 Chivers & Sons, Limited, Histon, Cambridge, " Bourne King David 198th " (52,377).

CLASS 149. BOAR, born in 1926.—PREMIUMS,
£8, £4, and £2.

1st No. 1392 Cowper, John E. B., Gogar Mains, Corstorphine, " Gogar Royal 2nd " (Ear No. 647).

2nd No. 1391 Chivers & Sons, Limited, Histon, Cambridge, " Spalding Turk 12th."

3rd No. 1395 Thomlinson, E., Hutton Wandesley, Marston, York, " Packwood Prince Edward."

V No. 1390 Campbell Brothers, Lochend Farm, Ratho Station, " Lochend Premier."

CLASS 150. BOAR, born in 1927.—PREMIUMS,
£6, £3, and £1.

- 1st No. 1400 Forteviot, Lord, Dupplin Castle, Perth (Ear No. 623).
 2nd No. 1399 Cowper, John E. B., Gogar Mains, Corstorphine (Ear No. 873).
 3rd No. 1404 Jack, A., Brunstane Mills, Musselburgh (Ear No. 403).
 V No. 1405 Jack, A., Brunstane Mills, Musselburgh (Ear No. 408).
 H No. 1408 Thomlinson, E., Hutton Wandesley, Marston, York, "Tock-with Prince George 6th."

CLASS 151. SOW, born before 1926.—PREMIUMS,
£8, £4, and £2.

- 1st No. 1416 Morgan, J. Pierpont, Wall Hall, Watford, Herts., "Aldenhams Champion Belle."
 2nd No. 1412 Cowper, John E. B., Gogar Mains, Corstorphine, "Tock-with Miss 12th" (Ear No. 1743).
 3rd No. 1411 Chivers & Sons, Limited, Histon, Cambridge, "Histon Lily 22nd" (79,118).
 V No. 1419 Thomlinson, E., Hutton Wandesley, Marston, York, "Bourne Lady Bountiful 2nd" (128,384).
 H No. 1410 Campbell Brothers, Lochend Farm, Ratho Station, "Lochend Sunflower 13th" (147,542).
 C No. 1409 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Stocktonheath Surprise 5th" (148,984).

CLASS 152. SOW, born in 1926.—PREMIUMS,
£8, £4, and £2.

- 1st No. 1431 Thomlinson, E., Hutton Wandesley, Marston, York, "Packwood Princess Pat 4th."
 2nd No. 1432 Thomlinson, E., Hutton Wandesley, Marston, York, "Walton Belle 23rd."
 3rd No. 1428 Morgan, J. Pierpont, Wall Hall, Watford, Herts., "Aldenhams Lily 4th."
 V No. 1424 Cowper, John E. B., Gogar Mains, Corstorphine, "Bourne Lady 36th."
 H No. 1422 Cavanagh, James, East Burnside, Broxburn, "Dalmeny Polly" (157,588).
 C No. 1427 Leitch, Mrs P. A., Inchstelly, Alves, Forres, "Inchstelly Maggie 254th."

CLASS 153. SOW, born in 1927.—PREMIUMS,
£6, £3, and £1.

- 1st No. 1449 Thomlinson, E., Hutton Wandesley, Marston, York, "Tock-with Jewel."
 2nd No. 1451 Thomlinson, E., Hutton Wandesley, Marston, York, "Tock-with Lady 28th."
 3rd No. 1439 Forteviot, Lord, Dupplin Castle, Perth (Ear No. 629).
 V No. 1438 Cowper, John E. B., Gogar Mains, Corstorphine (Ear No. 888).
 H No. 1444 Leitch, James MacKessack, Carden, Alves, Forres, "Carden Savona 272nd."
 C No. 1445 M'Naughton Brothers, Rogerfield, Baillieston, Glasgow (Ear No. 7011).

MIDDLE WHITE.

PRESIDENT'S CHAMPION MEDAL for best Middle White Pig.

No. 1457 Paget, Leopold C., Middlethorpe Hall, York, "Wharfedale Clinker" (51,673).

Reserve—No. 1472 Chivers & Sons, Limited, Histon, Cambridge, "Histon Rosadora 40th" (137,630).

Gold Medal, value £5, for the best Middle White Pig in the Show—given by the National Pig-Breeders' Association.

No. 1457 Paget, Leopold C., Middlethorpe Hall, York, "Wharfedale Clinker" (51,673).

CLASS 154. BOAR, born before 1927.—PREMIUMS,
£8, £4, and £2.

1st No. 1457 Paget, Leopold C., Middlethorpe Hall, York, "Wharfedale Clinker" (51,673).

2nd No. 1454 Chivers & Sons, Limited, Histon, Cambridge, "Histon Woodman 31st."

3rd No. 1456 Monteith, Major, Cranley, Carstairs, "Bantaskin Chief-tain" (49,317).

V No. 1458 Smith-Sligo, Captain R. W., Inzievar, Oakley, Fife, "Midlothian Jupiter."

H No. 1452 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Norsbury Swell."

CLASS 155. BOAR, born in 1927.—PREMIUMS,
£6, £3, and £1.

1st No. 1468 Paget, Leopold C., Middlethorpe Hall, York, "Wharfedale Structure."

2nd No. 1461 Chivers & Sons, Limited, Histon, Cambridge, "Histon Herald" (Ear No. 748).

3rd No. 1466 Hicks & Sons, Fordon, Hunmanby, Yorks., "Fordon Brian."

V No. 1467 Paget, Leopold C., Middlethorpe Hall, York, "Wharfedale Santoi."

H No. 1460 Astor, Lady Violet, Meikleour Pig Herd, Blairgowrie.

CLASS 156. SOW, born before 1926.—PREMIUMS,
£8, £4, and £2.

1st No. 1472 Chivers & Sons, Limited, Histon, Cambridge, "Histon Rosadora 40th" (137,630).

2nd No. 1473 Paget, Leopold C., Middlethorpe Hall, York, "Holywell Pamela" (117,694).

3rd No. 1474 Smith-Sligo, Captain R. W., Inzievar, Oakley, Fife, "Inzievar Cressida" (118,372).

V No. 1471 Astor, Lady Violet, Meikleour Pig Herd, Blairgowrie, "Meikleour Pansy."

C No. 1475 Stair, Colonel The Earl of, D.S.O., Planting End Pig Farm, Dunragit, Wigtownshire, "Godmersham Peeress 7th" (136,408).

CLASS 157. SOW, born in 1926.—PREMIUMS,
£8, £4, and £2.

- 1st No. 1478 Gamlen, Dr H. E., 87 Jesmond Road, Newcastle-on-Tyne,
"Fordon Vera 18th" (163,382).
2nd No. 1479 Gamlen, Dr H. E., 87 Jesmond Road, Newcastle-on-Tyne,
"Fordon Vera 20th" (163,386).
3rd No. 1480 Mackay, Donald J. R., Rutherford, West Linton, "Inzie-
var Gem."
V No. 1482 Phillips, Duncan, Gladstone Terrace, Fens, Stanley, Perth-
shire, "Halbeath Victoria 25th" (Ear No. 394).
H No. 1477 Drummond, Colonel A. Hay, Cromlix, Dunblane, "Cromlix
Rebecca" (Ear No. 230).

CLASS 158. SOW, born in 1927.—PREMIUMS,
£6, £3, and £1.

- 1st No. 1494 Paget, Leopold C., Middlethorpe Hall, York, "Wharfedale
Dolphina."
2nd No. 1485 Chivers & Sons, Limited, Histon, Cambridge, "Histon
Woodlands 6th."
3rd No. 1492 Hicks & Sons, Fordon, Hunmanby, Yorks., "Fordon
Ivory 4th."
V No. 1497 Woolland, Walter, Baydon Manor, Ramsbury, Wilts.,
"Ramsbury Regina 6th" (Ear No. 333).
H No. 1484 Astor, Lady Violet, Meikleour Pig Herd, Blairgowrie,
"Meikleour Sunbeam."
C No. 1491 Haig, Alastair N., Springfield Farm, Kinross, "Blairhill
Buntly 2nd" (Ear No. 41).
C No. 1495 Paget, Leopold C., Middlethorpe Hall, York, "Wharfedale
Whitestar."
C No. 1496 Stair, Colonel The Earl of, D.S.O., Planting End Pig Farm,
Dunragit, Wigtownshire, "Stair Molly."

LARGE BLACK.*PRESIDENT'S CHAMPION MEDAL for best Large Black Pig.*

- No. 1527 Woolland, Walter, Baydon Manor, Ramsbury, Wilts., "Baydon
Nightingale 22nd" (C 3098).
Reserve—No. 1501 Woolland, Walter, Baydon Manor, Ramsbury, Wilts.,
"Redmasley Perfection" (B 247).

Silver Medal for the best Large Black Boar—given by Large Black Pig
Society.

- No. 1501 Woolland, Walter, Baydon Manor, Ramsbury, Wilts., "Red-
masley Perfection" (B 247).

CLASS 159. BOAR, born before 1926.—PREMIUMS,
£8, £4, and £2.

- 1st No. 1501 Woolland, Walter, Baydon Manor, Ramsbury, Wilts.,
"Redmasley Perfection" (B 247).
2nd No. 1498 Adam, James, Park, Nairn, "Donald 1st of Bunchrew"
(A 142).
3rd No. 1500 M'Craig & Goodchild, Foreside of Cairn, Kirriemuir, "Ked-
ington Magnet" (A 879).
H No. 1499 Goddard, Captain H. E., Haisthorpe Hall, Burton Agnes,
Driffild, Yorks., "Fentongollan Hostage" (23,921).

CLASS 160. BOAR, born in 1926.—PREMIUMS,
£8, £4, and £2.

- 1st No. 1504 Woolland, Walter, Baydon Manor, Ramsbury, Wilts.,
" Baydon Royal's Son 8th " (C 897).

CLASS 161. BOAR, born in 1927.—PREMIUMS,
£6, £3, and £1.

- 1st No. 1509 Woolland, Walter, Baydon Manor, Ramsbury, Wilts.,
" Baydon General 5th " (D 119).
2nd No. 1508 Woolland, Walter, Baydon Manor, Ramsbury, Wilts.,
" Baydon General 4th " (D 117).
3rd No. 1506 Cunningham, Henry, Dolphingstone, Tranent, " Dolphing-
stone Tim 2nd " (D 149).
H No. 1505 Cunningham, Henry, Dolphingstone, Tranent, " Dolphing-
stone Tim 1st " (D 147).

Silver Medal for the best Large Black Sow—given by Large Black Pig Society.

- No. 1527 Woolland, Walter, Baydon Manor, Ramsbury, Wilts., " Baydon
Nightingale 22nd " (C 3098).

CLASS 162. SOW, born before 1926.—PREMIUMS,
£8, £4, and £2.

- 1st No. 1516 Woolland, Walter, Baydon Manor, Ramsbury, Wilts.,
" Molly of Moulton " (93,934).
2nd No. 1513 Elder, J. S., Stevenson, Haddington, " Bledisloe Snippy "
(115,890).
3rd No. 1512 Cunningham, Henry, Dolphingstone, Tranent, " Dolphing-
stone Senora 4th " (B 3188).
V No. 1511 Cunningham, Henry, Dolphingstone, Tranent, " Dolphing-
stone Senora 2nd " (B 3184).

CLASS 163. SOW, born in 1926.—PREMIUMS,
£8, £4, and £2.

- 1st No. 1527 Woolland, Walter, Baydon Manor, Ramsbury, Wilts.,
" Baydon Nightingale 22nd " (C 3098).
2nd No. 1521 Goddard, Captain H. E., Haisthorpe Hall, Burton Agnes,
Driffeld, Yorks., " Dale Wendy " (C 372).
3rd No. 1517 Adam, James, Park, Nairn, " Park Queen 2nd " (C 3464).
V No. 1525 M'Caig & Goodchild, Foreside of Cairn, Kirriemuir, " Dundas
Sundew 6th " (C 2050).
H No. 1522 Holms, Miss Constance E. C., Sandyford, Paisley, " Sandy-
ford Sunset 1st " (C 3030).
C No. 1519 Elder, J. S., Stevenson, Haddington, " Bearford Snippy "
(C 1976).
C No. 1524 M'Caig & Goodchild, Foreside of Cairn, Kirriemuir, " Yam
Elsie 6th " (C 272).

CLASS 164. SOW, born in 1927.—PREMIUMS,
£6, £3, and £1.

- 1st No. 1534 Woolland, Walter, Baydon Manor, Ramsbury, Wilts.,
" Baydon Empress 16th " (D 258).
2nd No. 1533 M'Caig & Goodchild, Foreside of Cairn, Kirriemuir, " Yam
Biddy 2nd " (D 196).
3rd No. 1532 M'Caig & Goodchild, Foreside of Cairn, Kirriemuir, " Yam
Biddy 1st " (D 194).

CUMBERLAND.

PRESIDENT'S CHAMPION MEDAL for best Cumberland Pig.

No. 1535 Cowper, Mrs Carleton, Carleton Hall, Penrith, "Eamont Peter Pan."

Reserve—No. 1536 Cowper, Mrs Carleton, Carleton Hall, Penrith, "Eamont Victorious" (CECJ 6).

CLASS 165. BOAR, born before 1927.—PREMIUMS,
£8, £4, and £2.

1st No. 1535 Cowper, Mrs Carleton, Carleton Hall, Penrith, "Eamont Peter Pan."

CLASS 166. BOAR, born in 1927.—PREMIUMS,
£6, £3, and £1.

1st No. 1536 Cowper, Mrs Carleton, Carleton Hall, Penrith, "Eamont Victorious" (CECJ 6).

CLASS 167. SOW, born before 1927.—PREMIUMS,
£8, £4, and £2.

1st No. 1537 Cowper, Mrs Carleton, Carleton Hall, Penrith, "Eamont Ivy" (6533).

CLASS 168. SOW, born in 1927.—PREMIUMS,
£6, £3, and £1.

1st No. 1538 Cowper, Mrs Carleton, Carleton Hall, Penrith, "Eamont Winnie" (CECJ 22).

2nd No. 1539 Cowper, Mrs Carleton, Carleton Hall, Penrith, "Eamont Woodbine" (CECJ 21).

LARGE WHITE ULSTER.

PRESIDENT'S CHAMPION MEDAL for best Large White Ulster Pig.

No. 1570 Allendale, Viscount, Dilston, Corbridge-on-Tyne, "Wood Park Painted Beauty" (6654).

Reserve—No. 1564 Short, James, Wood Park, Anney, Beragh, Co. Tyrone, "Wood Park Silver Pearl" (6642).

CLASS 169. BOAR, born before 1927.—PREMIUMS,
£8, £4, and £2.

1st No. 1540 Allendale, Viscount, Dilston, Corbridge-on-Tyne, "Bywell Bouncer" (5599).

2nd No. 1541 M'Elroy, William J., Rosstowney House, Londonderry, "Rosstowney Rattler" (5559).

CLASS 170. BOAR, born in 1927.—PREMIUMS,
£6, £3, and £1.

- 1st No. 1547 Short, James, Wood Park, Anney, Beragh, Co. Tyrone,
"Wood Park Promising Boy" (5591).
2nd No. 1546 Short, James, Wood Park, Anney, Beragh, Co. Tyrone,
"Wood Park Extra Boy" (5589).
3rd No. 1542 M'Elroy, William J., Rosstowney House, Londonderry,
"Rosstowney Bounder" (5617).
V No. 1543 Robertson, Miss D., Dogleap, Limavady, Co. Derry, "Dog-
leap Defender" (5527).
H No. 1544 Short, James, Wood Park, Anney, Beragh, Co. Tyrone,
"Wood Park Rover Chief" (5581).
C No. 1545 Short, James, Wood Park, Anney, Beragh, Co. Tyrone,
"Wood Park Royal Chief" (5579).

CLASS 171. SOW, born before 1927.—PREMIUMS, ,
£8, £4, and £2.

- 1st No. 1564 Short, James, Wood Park, Anney, Beragh, Co. Tyrone,
"Wood Park Silver Pearl" (6642).
2nd No. 1551 Allendale, Viscount, Dilston, Corbridge-on-Tyne, "Bywell
Bounty" (6720).
3rd No. 1555 M'Elroy, William J., Rosstowney House, Londonderry,
"Rosstowney Fair Lass."
V No. 1569 Smyth, William R., Ballyalgin, Crossgar, Co. Down, "Bally-
algin Opal" (6636).
H No. 1567 Smyth, William R., Ballyalgin, Crossgar, Co. Down,
"Cottage Lila" (6536).
C No. 1554 M'Elroy, William J., Rosstowney House, Londonderry,
"Rosstowney Fair Dame."
C No. 1559 Robertson, Miss D., Dogleap, Limavady, Co. Derry, "Dog-
leap Wild Rose 6th."
C No. 1565 Short, James, Wood Park, Anney, Beragh, Co. Tyrone,
"Wood Park Gentle Bess" (6708).

CLASS 172. SOW, born in 1927.—PREMIUMS,
£6, £3, and £1.

- 1st No. 1570 Allendale, Viscount, Dilston, Corbridge-on-Tyne, "Wood
Park Painted Beauty" (6654).
2nd No. 1579 Smyth, William R., Ballyalgin, Crossgar, Co. Down, "Bally-
algin Amethyst" (6634).
3rd No. 1580 Smyth, William R., Ballyalgin, Crossgar, Co. Down, "Bally-
algin Onyx" (6624).
V No. 1575 Robertson, Miss D., Dogleap, Limavady, Co. Derry, "Dog-
leap Faith 2nd" (6616).
H No. 1571 M'Elroy, William J., Rosstowney House, Londonderry,
"Rosstowney Good Luck."
C No. 1577 Short, James, Wood Park, Anney, Beragh, Co. Tyrone,
"Dogleap Faith 3rd" (6618).

POULTRY

First Premium—*One Sovereign*. Second Premium—*Ten Shillings*. Where there are four or more entries a Third Premium—*Five Shillings*.

Champion Challenge Bowl, value £50, for the best exhibit in the Poultry Classes—given by the Proprietors of 'The Scottish Poultry News,' Aberdeen.

No. 183 Weir, John, Midtown, New Abbey Road, Dumfries.

CHAMPION MEDALS.

1. *Best Cock, any Variety.*

No. 183 Weir, John, Midtown, New Abbey Road, Dumfries.

2. *Best Hen, any Variety.*

No. 416 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.

3. *Best Cockerel, any Variety.*

No. 77 Milne, George, The Cross, Whitburn.

4. *Best Pullet, any Variety.*

No. 516 Delaney, James, Gateside, Fife (Modern Game).

5. *Best Waterfowl.*

No. 601 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.

6. *Best Turkey.*

No. 669 Shewan, Alexander, South Percyhorner, Fraserburgh.

CLASS 1. LEGHORN—White—Cock.

- 1st No. 5 Retsen, John M., Mouse Mill, Lanark.
- 2nd No. 1 Binnie, W., Garth House, Denny.
- 3rd No. 4 Graham, Mrs R., Wallacetown Cottages, Gasstown, Dumfries.

CLASS 2. LEGHORN—White—Hen.

- 1st No. 6 Binnie, W., Garth House, Denny.
- 2nd No. 10 Thorburn & Steel, 34 High Street, Lockerbie.
- 3rd No. 9 Scott, Alexander, & Sons, Sornhill, Galston.
- V No. 8 Retsen, John M., Mouse Mill, Lanark.

CLASS 3. LEGHORN—White—Cockerel.

- 1st No. 11 Binnie, W., Garth House, Denny.
- 2nd No. 12 Craven, Joseph, 112 Queen Street, Dumfries.
- 3rd No. 15 Glencross, R., & Son, Largo Cottage, Glencairg, Fife.

CLASS 4. LEGHORN—White—Pullet.

- 1st No. 16 Binnie, W., Garth House, Denny.
 2nd No. 19 Ferries, Robert, Countesswells, Aberdeen.
 3rd No. 17 Craven, Joseph, 112 Queen Street, Dumfries.
 V No. 20 Glencross, R., & Son, Largo Cottage, Glencraig, Fife.
 H No. 21 Minto, The Earl of, Minto Poultry Farm, Hawick.
 C No. 22 Minto, The Earl of, Minto Poultry Farm, Hawick.

CLASS 5. LEGHORN—Exchequer—Cock or Cockerel.

- 1st No. 24 Binnie, W., Garth House, Denny (Cock).
 2nd No. 26 Nairn, P. D., Hillcrest, St Ninians, Stirling (Cock).
 3rd No. 25 Jamieson, George, Brentwood, Broughton, Preston (Cockerel).

CLASS 6. LEGHORN—Exchequer—Hen or Pullet.

- 1st No. 27 Binnie, W., Garth House, Denny (Hen).
 2nd No. 29 Nairn, P. D., Hillcrest, St Ninians, Stirling (Hen).
 V No. 28 Jamieson, George, Brentwood, Broughton, Preston (Pullet).

CLASS 7. LEGHORN—Any other Colour—Cock.

- 1st No. 33 Ferries, Robert, Countesswells, Aberdeen (Brown).
 2nd No. 35 Manson, William, Whitehall, Maybole (Brown).
 3rd No. 30 Ballantyne, John, Steele Road, Newcastleton (Brown).

CLASS 8. LEGHORN—Any other Colour—Hen.

- 1st No. 40 Ferries, Robert, Countesswells, Aberdeen (Brown).
 2nd No. 43 Guthrie, J. & M., Commonhead, Kilmarnock (Black).
 3rd No. 49 Rutherford, A., & Son, Parliament Square, Kinross (Black).
 V No. 50 Stark, John T., Artella Cottages, Glencraig, Fife (Black).
 H No. 45 M'Latchie, William, Mansfield Village, New Cumnock (Brown).
 C No. 36 Ballantyne, John, Steele Road, Newcastleton (Brown).

CLASS 9. LEGHORN—Any other Colour—Cockerel.

- 1st No. 55 Guthrie, J. & M., Commonhead, Kilmarnock (Black).
 2nd No. 51 Brown, Charles, Ivybank, Kintore (Brown).
 3rd No. 54 Ferries, Robert, Countesswells, Aberdeen (Brown).
 V No. 53 Ferries, Robert, Countesswells, Aberdeen (Brown).
 H No. 57 Robertson, R., Ballingry Road, Lochore (Black).
 C No. 56 Manson, William, Whitehall, Maybole (Brown).

CLASS 10. LEGHORN—Any other Colour—Pullet.

- 1st No. 61 Guthrie, J. & M., Commonhead, Kilmarnock (Black).
 2nd No. 60 Ferries, Robert, Countesswells, Aberdeen (Brown).
 3rd No. 63 Robertson, R., Ballingry Road, Lochore (Black).
 V No. 62 Manson, William, Whitehall, Maybole (Brown).

CLASS 11. MINORCA—Cock.

- 1st No. 65 Cameron, James, Millbank, Southwick, Dumfries.
 2nd No. 64 Binnie, W., Garth House, Denny.
 3rd No. 66 Craig, Robert, East Crown House, Inverness.

CLASS 12. MINORCA—Hen.

- 1st No. 68 Binnie, W., Garth House, Denny.
 2nd No. 69 Cameron, James, Millbank, Southwick, Dumfries.
 3rd No. 70 Craig, Robert, East Crown House, Inverness.
 V No. 71 Dalrymple, John, & Son, Meadowview, Leslie, Fife.
 H No. 73 Robb, William, Burnbrae, Blackburn.

CLASS 13. MINORCA—Cockerel.

- 1st No. 77 Milne, George, The Cross, Whitburn.
 2nd No. 74 Binnie, W., Garth House, Denny.
 3rd No. 76 Macgregor, James Scott, Bridgend Bakery, Greenlaw, Berwickshire.

CLASS 14. MINORCA—Pullet.

- 1st No. 81 Macgregor, James Scott, Bridgend Bakery, Greenlaw, Berwickshire.
 2nd No. 80 Macgregor, James Scott, Bridgend Bakery, Greenlaw, Berwickshire.
 3rd No. 78 Binnie, W., Garth House, Denny.
 V No. 82 Milne, George, The Cross, Whitburn.

CLASS 15. HAMBURGH—Cock.

- 1st No. 84 Beattie, Robert, 114 Lockerbie Road, Dumfries.
 2nd No. 83 Beattie, Robert, 114 Lockerbie Road, Dumfries.
 3rd No. 86 Forsyth, John F., Clackmannan.
 V No. 87 Marshall, Adam, Anglepark Cottage, Fauldhouse.
 H No. 85 Forsyth, John F., Clackmannan.

CLASS 16. HAMBURGH—Hen.

- 1st No. 91 Forsyth, John F., Clackmannan.
 2nd No. 88 Beattie, Robert, 114 Lockerbie Road, Dumfries.
 3rd No. 90 Forsyth, John F., Clackmannan.
 V No. 92 Marshall, Adam, Anglepark Cottage, Fauldhouse.

CLASS 17. HAMBURGH—Cockerel.

(Not forward.)

CLASS 18. HAMBURGH—Pullet.

- 1st No. 94 Forsyth, John F., Clackmannan.

CLASS 19. SCOTCH GREY—Cock.

- 1st No. 98 Todd, Andrew, 47 Main Street, Tullibody.
 2nd No. 97 Ramsay, William, Muirhouse Cottage, Crosshouse.
 3rd No. 96 Ramsay, William, Muirhouse Cottage, Crosshouse.
 V No. 101 Watson, William, Cawdor Home Farm, Nairn.
 H No. 95 Carswell, John, 148 Grahams Road, Falkirk.

CLASS 20. SCOTCH GREY—Hen.

- 1st No. 105 Retsen, John M., Mouse Mill, Lanark.
 2nd No. 106 Retsen, John M., Mouse Mill, Lanark.
 3rd No. 104 Ramsay, William, Muirhouse Cottage, Crosshouse.
 V No. 103 Ramsay, William, Muirhouse Cottage, Crosshouse.
 H No. 107 Todd, Andrew, 47 Main Street, Tullibody.
 C No. 109 Watson, William, Cawdor Home Farm, Nairn.

CLASS 21. SCOTCH GREY—Cockerel.

- 1st No. 111 Ramsay, William, Muirhouse Cottage, Crosshouse.
 2nd No. 110 Ramsay, William, Muirhouse Cottage, Crosshouse.
 V No. 112 Watson, William, Cawdor Home Farm, Nairn.

CLASS 22. SCOTCH GREY—Pullet.

- 1st No. 113 Ramsay, William, Muirhouse Cottage, Crosshouse.
 2nd No. 114 Ramsay, William, Muirhouse Cottage, Crosshouse.
 3rd No. 115 Todd, Andrew, 47 Main Street, Tullibody.
 V No. 116 Watson, William, Cawdor Home Farm, Nairn.

CLASS 23. PLYMOUTH ROCK—Barred—Cock.

- 1st No. 117 Argo, Fred, Bructor, Inverurie.
 2nd No. 120 Logan, James, Lauder Place, East Linton.
 3rd No. 122 Wilkie, John, Orr Bridge Poultry Farm, Dysart.
 V No. 121 M'Gillivray, J., Drumbreck, Kirkintilloch.

CLASS 24. PLYMOUTH ROCK—Barred—Hen.

- 1st No. 125 Logan, James, Lauder Place, East Linton.
 2nd No. 123 Argo, Fred, Bructor, Inverurie.
 3rd No. 127 MacLaren, Thomas, School House, Newton Mearns.
 V No. 126 M'Gillivray, J., Drumbreck, Kirkintilloch.

CLASS 25. PLYMOUTH ROCK—Barred—Cockerel.

- 1st No. 129 M'Gillivray, J., Drumbreck, Kirkintilloch.

CLASS 26. PLYMOUTH ROCK—Barred—Pullet.

- 1st No. 131 M'Gillivray, J., Drumbreck, Kirkintilloch.

CLASS 27. PLYMOUTH ROCK—Any other Colour—Cock or Cockerel.

- 1st No. 135 M'Gillivray, J., Drumbreck, Kirkintilloch (Cock, Buff).
 2nd No. 134 Horn, Miss M. Christian, Woodcote Park, Blackshiels (Cock, Buff).

CLASS 28. PLYMOUTH ROCK—Any other Colour—Hen or Pullet.

- 1st No. 137 Fulton, John, Lauder Place, East Linton (Hen, White).
 2nd No. 138 Horn, Miss M. Christian, Woodcote Park, Blackshiels (Pullet, Buff).

CLASS 29. ORPINGTON—Black—Cock.

- 1st No. 142 Reid, David, Firthview, Portgordon.
 2nd No. 140 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.

CLASS 30. ORPINGTON—Black—Hen.

- 1st No. 145 Reid, David, Firthview, Portgordon.
 2nd No. 146 Reid, David, Firthview, Portgordon.
 3rd No. 143 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.

CLASS 31. ORPINGTON—Any other Colour—Cock.

- 1st No. 151 Reid, David, Firthview, Portgordon (Buff).
 2nd No. 149 Kirkwood, R. A., Camelon Hotel, Falkirk (Buff).
 3rd No. 152 Reid, David, Firthview, Portgordon (Buff).

CLASS 32. ORPINGTON—Any other Colour—Hen.

- 1st No. 155 Reid, David, Firthview, Portgordon (Buff).
 2nd No. 154 Reid, David, Firthview, Portgordon (Buff).

CLASS 33. ORPINGTON—Any Colour—Cockerel.

- 1st No. 157 Thomson, William, Ivy Cottage, Tynninghame, Prestonkirk (Black).
 2nd No. 156 Reid, David, Firthview, Portgordon (Buff).

CLASS 34. ORPINGTON—Any Colour—Pullet.

- 1st No. 159 Reid, David, Firthview, Portgordon (Black).
 2nd No. 158 Reid, David, Firthview, Portgordon (Buff).

CLASS 35. WYANDOTTE—Gold or Silver—Cock.

- 1st No. 160 Morgan, William, Balcurvie, Windygates (Gold).
 2nd No. 161 Morgan, William, Balcurvie, Windygates (Gold).

CLASS 36. WYANDOTTE—Gold or Silver—Hen.

- 1st No. 165 Morgan, William, Balcurvie, Windygates (Gold).
 2nd No. 166 Morgan, William, Balcurvie, Windygates (Silver).

CLASS 37. WYANDOTTE—Gold or Silver—Cockerel.

- 1st No. 168 Petticrew, James, Springhill, Strone, Argyllshire (Gold).
 2nd No. 167 Morgan, William, Balcurvie, Windygates (Gold).
 3rd No. 169 Philipson, J. M., Wyandotte Farm, Gilsland, Carlisle (Gold).
 V No. 170 Philipson, J. M., Wyandotte Farm, Gilsland, Carlisle (Silver).

CLASS 38. WYANDOTTE—Gold or Silver—Pullet.

- 1st No. 174 Philipson, J. M., Wyandotte Farm, Gilsland, Carlisle (Silver).
 2nd No. 172 Morgan, William, Balcurvie, Windygates (Gold).
 3rd No. 175 Philipson, J. M., Wyandotte Farm, Gilsland, Carlisle (Gold).
 V No. 173 Petticrew, James, Springhill, Strone, Argyllshire (Gold).

CLASS 39. WYANDOTTE—White—Cock.

- 1st No. 183 Weir, John, Midtown, New Abbey Road, Dumfries.
 2nd No. 176 Adamson, Fred, Blinkhoolie, Kinross.
 3rd No. 177 Adamson, Fred, Blinkhoolie, Kinross.
 V No. 179 Binnie, W., Garth House, Denny.
 H No. 178 Bell, John, jun., Happendon, Douglas, Lanarkshire.

CLASS 40. WYANDOTTE—White—Hen.

- 1st No. 184 Binnie, W., Garth House, Denny.
 2nd No. 187 Reid, David, Firthview, Portgordon.
 3rd No. 188 Weir, John, Midtown, New Abbey Road, Dumfries.

CLASS 41. WYANDOTTE—White—Cockerel.

- 1st No. 191 Reid, David, Firthview, Portgordon.
 2nd No. 193 Weir, John, Midtown, New Abbey Road, Dumfries,
 3rd No. 189 Binnie, W., Garth House, Denny.

CLASS 42. WYANDOTTE—White—Pullet.

- 1st No. 198 Reid, David, Firthview, Portgordon.
 2nd No. 197 Henderson, J. Milne, C.A., 15 Merchiston Park, Edinburgh.
 3rd No. 200 Weir, John, Midtown, New Abbey Road, Dumfries.
 V No. 195 Binnie, W., Garth House, Denny.
 H No. 194 Adamson, Fred, Blinkhoolie, Kinross.

CLASS 43. WYANDOTTE—Partridge—Cock or Cockerel.

- 1st No. 201 Argo, Fred, Bructor, Inverurie (Cock).
 2nd No. 202 Brown, Charles, Ivybank, Kintore (Cock).

CLASS 44. WYANDOTTE—Partridge—Hen or Pullet.

- 1st No. 204 Argo, Fred, Bructor, Inverurie (Hen).
 2nd No. 205 Boardley, J. A., Slyne Road, Lancaster (Hen).
 3rd No. 207 Miller, R. Scott, Clydeneuk Poultry Farm, Uddingston (Pullet).

CLASS 45. WYANDOTTE—Columbian—Cock or Cockerel.

- 1st No. 210 Parker, Miss M. S., Craigmaddie, Milngavie (Cock).
 2nd No. 211 Parker, Miss M. S., Craigmaddie, Milngavie (Cock).
 3rd No. 212 Parker, Miss M. S., Craigmaddie, Milngavie (Cockerel).

CLASS 46. WYANDOTTE—Columbian—Hen or Pullet.

- 1st No. 214 Cocks, John F., Ware Park Poultry Farm, Ware, Herts. (Pullet).
 2nd No. 216 Parker, Miss M. S., Craigmaddie, Milngavie (Hen).
 3rd No. 217 Parker, Miss M. S., Craigmaddie, Milngavie (Hen).
 V No. 218 Parker, Miss M. S., Craigmaddie, Milngavie (Hen).

CLASS 47. WYANDOTTE—Any other Colour—Cock or Cockerel.

- 1st No. 223 Morgan, William, Balcurvie, Windygates (Cock, Black).
 2nd No. 220 Cowe, John, Denhead of Gray, Invergowrie (Cock, Black).
 3rd No. 221 Cowe, John, Denhead of Gray, Invergowrie (Cock, Black).
 V No. 222 Hamilton, Thomas, Kirkton Kilns, Bathgate (Cockerel, Buff).

CLASS 48. WYANDOTTE—Any other Colour—Hen or Pullet.

- 1st No. 225 Cowe, John, Denhead of Gray, Invergowrie (Hen, Black).
 2nd No. 226 Cowe, John, Denhead of Gray, Invergowrie (Hen, Black).
 3rd No. 227 Cowe, John, Denhead of Gray, Invergowrie (Hen, Black).
 V No. 224 Argo, Fred, Bructor, Inverurie (Hen, Black).
 H No. 228 Hamilton, Thomas, Kirkton Kilns, Bathgate (Pullet, Buff).

CLASS 49. RHODE ISLAND RED—Cock.

- 1st No. 231 Brown, Charles, Ivybank, Kintore.
 2nd No. 236 M'Gillivray, J., Drumbreck, Kirkintilloch.
 3rd No. 241 Morgan, William, Balcurvie, Windygates.
 V No. 242 Petrie, Alexander, Mayfield, Airth Station, Larbert.
 H No. 248 Wyllie, Thomas, Glenevan, Beattock.
 C No. 233 Carmichael, J. & D., 39 Belstane Road, Carluke.

CLASS 50. RHODE ISLAND RED—Hen.

- 1st No. 250 Argo, Fred, Bructor, Inverurie.
 2nd No. 262 Reid, David, Firthview, Portgordon.
 3rd No. 258 Meek, Robert, Whitburn, West Lothian.
 V No. 253 Carmichael, J. & D., 39 Belstane Road, Carluke.
 H No. 251 Brown, Charles, Ivybank, Kintore.
 C No. 259 Meek, Robert, Whitburn, West Lothian.

CLASS 51. RHODE ISLAND RED—Cockerel.

- 1st No. 275 Reid, David, Firthview, Portgordon.
 2nd No. 279 Thomson, James, Blackcot, Newbattle.
 3rd No. 276 Reid, David, Firthview, Portgordon.
 V No. 266 Anderson, A., 113 High Street, Dunbar.
 H No. 270 Carmichael, J. & D., 39 Belstane Road, Carluke.
 C No. 273 M'Gillivray, J., Drumbreck, Kirkintilloch.

CLASS 52. RHODE ISLAND RED—Pullet.

- 1st No. 293 Reid, David, Firthview, Portgordon.
 2nd No. 283 Brodie, Mrs, Lethen, Nairn.
 3rd No. 290 Petrie, Alexander, Mayfield, Airth Station, Larbert.
 V No. 285 Carmichael, J. & D., 39 Belstane Road, Carluke.
 H No. 295 Robertson, John, Craigend, Dundas Castle, South Queens-
 ferry.
 C No. 281 Anderson, A., 113 High Street, Dunbar.

CLASS 53. SUSSEX—Light—Cock.

- 1st No. 304 Morgan, William, Balcurvie, Windygates.
 2nd No. 306 Wilkie, John, Orr Bridge Poultry Farm, Dysart.
 3rd No. 301 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent.
 V No. 302 Minto, The Earl of, Minto Poultry Farm, Hawick.
 H No. 299 Cameron, Mrs Allan, Darris, Dores, Inverness.

CLASS 54. SUSSEX—Light—Hen.

- 1st No. 314 Wilkie, John, Orr Bridge Poultry Farm, Dysart.
 2nd No. 309 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent.
 3rd No. 310 Morgan, William, Balcurvie, Windygates.
 V No. 312 Scott, Joseph G., Congalton, Drem.
 H No. 311 Scott, Joseph G., Congalton, Drem.
 C No. 313 Scott, Joseph G., Congalton, Drem.

CLASS 55. SUSSEX—Light—Cockerel.

- 1st No. 322 Wilkie, John, Orr Bridge Poultry Farm, Dysart.
 2nd No. 318 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent.
 3rd No. 319 Pretswell, Malcolm M., Station Lodge, Biggar.
 V No. 321 Tewnion, William J., Milltown, Rothiemay.
 H No. 317 Fulton, H. G., Kettins, Coupar-Angus.

CLASS 56. SUSSEX—Light—Pullet.

- 1st No. 328 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent.
 2nd No. 323 Churchill, Captain Spencer, Northwick Park, Blockley, Worcestershire.
 3rd No. 326 Forrest, James, 51 Stewart Street, Carlisle.
 V No. 334 Wilkie, John, Orr Bridge Poultry Farm, Dysart.
 H No. 330 Minto, The Earl of, Minto Poultry Farm, Hawick.
 C No. 329 Minto, The Earl of, Minto Poultry Farm, Hawick.

CLASS 57. SUSSEX—Any other Variety—Cock.

- 1st No. 337 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Speckled).
 2nd No. 335 Arden, Lawrence, The Grove, Landulph, Hatt, Cornwall (Red).
 3rd No. 336 Cameron, Mrs Allan, Darris, Dore, Inverness (Red).

CLASS 58. SUSSEX—Any other Variety—Hen.

- 1st No. 345 Morgan, William, Balcurvie, Windygates (Speckled).
 2nd No. 343 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Brown).
 3rd No. 342 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Red).
 V No. 339 Arden, Lawrence, The Grove, Landulph, Hatt, Cornwall (Brown).
 H No. 340 Cameron, Mrs Allan, Darris, Dore, Inverness (Red).

CLASS 59. SUSSEX—Any other Variety—Cockerel.

- 1st No. 347 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Speckled).
 2nd No. 349 Tewnion, William J., Milltown, Rothiemay (Red and Speckled).
 3rd No. 348 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Brown).
 V No. 350 Tewnion, William J., Milltown, Rothiemay (Red and Speckled).
 H No. 351 Wilson, George, 16 Dalziel Place, Edinburgh (White).

CLASS 60. SUSSEX—Any other Variety—Pullet.

- 1st No. 353 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Brown).
 2nd No. 352 Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Speckled).
 3rd No. 354 Tewnion, William J., Milltown, Rothiemay (Red and Speckled).
 V No. 356 Wilson, George, 16 Dalziel Place, Edinburgh (White).
 H No. 355 Tewnion, William J., Milltown, Rothiemay (Red and Speckled).

CLASS 61. DORKING—Coloured—Cock.

- 1st No. 357 Aitkenhead, Charles, Carr House Farm, New Seaham.
 2nd No. 358 Cathcart, Colonel J. T., Pitcairnie, Newburgh, Fife.
 3rd No. 360 Mechie, John, Upper Green, Auchtermuchty.

CLASS 62. DORKING—Coloured—Hen.

- 1st No. 364 Major, A. J., Ditton, Langley, Slough, Bucks.
 2nd No. 362 Aitkenhead, Charles, Carr House Farm, New Seaham.
 3rd No. 365 Mechie, John, Upper Green, Auchtermuchty.

CLASS 63. DORKING—Coloured—Cockerel.

- 1st No. 368 Major, A. J., Ditton, Langley, Slough, Bucks.
 2nd No. 369 Mechie, John, Upper Green, Auchtermuchty.

CLASS 64. DORKING—Coloured—Pullet.

- 1st No. 372 Mechie, John, Upper Green, Auchtermuchty.
 2nd No. 371 Major, A. J., Ditton, Langley, Slough, Bucks.

CLASS 65. DORKING—Silver Grey—Cock.

- 1st No. 377 Meikle, John, Camregan, Girvan.
 2nd No. 376 Mechie, John, Upper Green, Auchtermuchty.
 3rd No. 378 Richardson, Messrs, Courstein, Lockerbie.

CLASS 66. DORKING—Silver Grey—Hen.

- 1st No. 379 Aitkenhead, Charles, Carr House Farm, New Seaham.
 2nd No. 382 Richardson, Messrs, Courstein, Lockerbie.
 3rd No. 380 Mechie, John, Upper Green, Auchtermuchty.

CLASS 67. DORKING—Silver Grey—Cockerel.

- 1st No. 385 Mechie, John, Upper Green, Auchtermuchty.
 2nd No. 384 Major, A. J., Ditton, Langley, Slough, Bucks.

CLASS 68. DORKING—Silver Grey—Pullet.

- 1st No. 386 Major, A. J., Ditton, Langley, Slough, Bucks.
 2nd No. 387 Mechie, John, Upper Green, Auchtermuchty.

CLASS 69. SCOTS DUMPY—Cock.

- 1st No. 390 Kerr, J. E., of Harviestoun, Dollar.
 2nd No. 388 Kerr, J. E., of Harviestoun, Dollar.
 3rd No. 389 Kerr, J. E., of Harviestoun, Dollar.
 V No. 391 Major, A. J., Ditton, Langley, Slough, Bucks.

CLASS 70. SCOTS DUMPY—Hen.

- 1st No. 393 Kerr, J. E., of Harviestoun, Dollar.
 2nd No. 392 Kerr, J. E., of Harviestoun, Dollar.
 3rd No. 395 Major, A. J., Ditton, Langley, Slough, Bucks.
 V No. 394 Kerr, J. E., of Harviestoun, Dollar.

CLASS 71. SCOTS DUMPY—Cockerel.

- 1st No. 397 Kerr, J. E., of Harviestoun, Dollar.
 2nd No. 398 Kerr, J. E., of Harviestoun, Dollar.

CLASS 72. SCOTS DUMPY—Pullet.

- 1st No. 402 Kerr, J. E., of Harviestoun, Dollar.
 2nd No. 403 Kerr, J. E., of Harviestoun, Dollar.
 3rd No. 401 Brownlie, Thomas L., Woodside Poultry Farm, Summerston,
 Glasgow, N.W.

CLASS 73. INDIAN GAME—Cock.

- 1st No. 411 Malcolm, Maurice, Boromeadow, Stirling.
 2nd No. 406 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.
 3rd No. 407 Dalgleish, James P., of Westgrange, Bogside Station, Alloa.
 V No. 412 Malcolm, Maurice, Boromeadow, Stirling.
 H No. 410 Girdwood, Gavin, Doonbank, Ayr.
 C No. 409 Girdwood, Gavin, Doonbank, Ayr.

CLASS 74. INDIAN GAME—Hen.

- 1st No. 416 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.
 2nd No. 419 Malcolm, Maurice, Boromeadow, Stirling.
 3rd No. 423 Scott, Hugh, 1 Orangefield Place, Greenock.
 V No. 418 Girdwood, Gavin, Doonbank, Ayr.
 H No. 417 Girdwood, Gavin, Doonbank, Ayr.
 C No. 420 Malcolm, Maurice, Boromeadow, Stirling.
 C No. 422 Scott, Hugh, 1 Orangefield Place, Greenock.

CLASS 75. INDIAN GAME—Cockerel.

- 1st No. 424 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.
 2nd No. 426 Malcolm, Maurice, Boromeadow, Stirling.
 3rd No. 428 Miller, R. Scott, Clydeneuk Poultry Farm, Uddingston.

CLASS 76. INDIAN GAME—Pullet.

- 1st No. 429 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.
 2nd No. 431 Malcolm, Maurice, Boromeadow, Stirling.
 3rd No. 433 Miller, R. Scott, Clydeneuk Poultry Farm, Uddingston.
 C No. 430 Dalgleish, James P., of Westgrange, Bogside Station, Alloa.

CLASS 77. OLD ENGLISH GAME—Cock.

- 1st No. 436 Crichton, D. & F., Foodieash, Cupar-Fife.
 2nd No. 441 Smithson, Mrs, Roselea, Ireby, Carlisle.
 3rd No. 435 Bonthron, Peter, 24 Arthur Street, Cowdenbeath.
 V No. 439 Reed, Graham, Low Cote Hill Farm, Carlisle.
 H No. 440 Russell, H. N. & H. T., Newton Holme, Kirkbride, Carlisle.
 C No. 438 Hutt, John, Denend, Cardenden, Fife.

CLASS 78. OLD ENGLISH GAME—Hen.

- 1st No. 447 Russell, H. N. & H. T., Newton Holme, Kirkbride, Carlisle.
 2nd No. 442 Armstrong, Joseph J., Bar Close, Scaleby, Carlisle.
 3rd No. 445 Hutt, John, Denend, Cardenden, Fife.
 H No. 443 Bonthron, Peter, 24 Arthur Street, Cowdenbeath.
 C No. 444 Crichton, D. & F., Foodieash, Cupar-Fife.

CLASS 79. OLD ENGLISH GAME—Cockerel.

- 1st No. 450 Reed, Graham, Low Cote Hill Farm, Carlisle.
 2nd No. 449 Armstrong, Joseph J., Bar Close, Scaleby, Carlisle.
 V No. 448 Armstrong, Joseph J., Bar Close, Scaleby, Carlisle.

CLASS 80. OLD ENGLISH GAME—Pullet.

- 1st No. 453 Russell, H. N. & H. T., Newton Holme, Kirkbride, Carlisle.
 2nd No. 454 Smithson, Mrs. Roselea, Ireby, Carlisle.
 3rd No. 451 Armstrong, Joseph J., Bar Close, Scaleby, Carlisle.
 C No. 452 Reed, Graham, Low Cote Hill Farm, Carlisle.

CLASS 81. BANTAM GAME—Old English—Cock.

- 1st No. 459 Sharp & Co., 27 Forest Road, Townhill, Dunfermline.
 2nd No. 456 Cowe, John, Denhead of Gray, Invergowrie.
 3rd No. 455 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.
 V No. 460 Sharp & Co., 27 Forest Road, Townhill, Dunfermline.

CLASS 82. BANTAM GAME—Old English—Hen.

- 1st No. 464 Ellwood, Joseph W., Papcastle, Cockermouth.
 2nd No. 468 Sharp & Co., 27 Forest Road, Townhill, Dunfermline.
 3rd No. 462 Cowe, John, Denhead of Gray, Invergowrie.
 V No. 467 Sharp & Co., 27 Forest Road, Townhill, Dunfermline.
 H No. 466 Miller, R. Scott, Clydeneuk Poultry Farm, Uddingston.
 C No. 461 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.

CLASS 83. BANTAM GAME—Modern—Cock.

- 1st No. 474 White, George, County Building, Cupar-Fife.
 2nd No. 469 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall.
 3rd No. 472 Sandison, Alfred, Bakery, Echt.
 V No. 471 Lindsay, Miss Lizzie Low, Coaltown, Markinch.
 C No. 475 Wilkinson, John, Glendale Villa, Wooler, Northumberland.

CLASS 84. BANTAM GAME—Modern—Hen.

- 1st No. 478 Lindsay, Miss Lizzie Low, Coaltown, Markinch.
 2nd No. 481 White, George, County Building, Cupar-Fife.
 3rd No. 482 Wilkinson, John, Glendale Villa, Wooler, Northumberland.
 V No. 479 Sandison, Alfred, Bakery, Echt.
 H No. 480 Sandison, Alfred, Bakery, Echt.

CLASS 85. BANTAM—Other than Game—Cock.

- 1st No. 485 Buchanan, John, Nerston, East Kilbride (Rosecomb, Black).
 2nd No. 487 Cowe, John, Denhead of Gray, Invergowrie (Wyandotte, Black).
 3rd No. 484 Binnie, W., Garth House, Denny (Wyandotte, White).
 V No. 483 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall (Indian Game).
 H No. 486 Clark, Robert B., Marionville, Newmains (Sebright, Silver).
 C No. 489 Ellwood, Joseph W., Papcastle, Cockermouth (Indian Game).

CLASS 86. BANTAM—Other than Game—Hen.

- 1st No. 495 Buchanan, John, Nerston, East Kilbride (Rosecomb, Black).
 2nd No. 494 Binnie, W., Garth House, Denny (Wyandotte, White).
 3rd No. 496 Clark, Robert B., Marionville, Newmains (Sebright, Silver).
 V No. 497 Cowe, John, Denhead of Gray, Invergowrie (Wyandotte, Black).
 H No. 509 Wilkinson, John, Glendale Villa, Wooler, Northumberland (Pekin, Black).
 C No. 493 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall (Jubilee Indian Game).
 C No. 502 Jeffrey, Alexander, jun., Niddrie Mills, Portobello (Pekin, Black).
 C No. 503 Lindsay, Miss Lizzie Low, Coaltown, Markinch (Rosecomb, Black).
 C No. 507 Petrie, Alexander, Mayfield, Airth Station, Larbert (Rhode Island Red).

CLASS 87. BANTAM—Any Variety—Cockerel.

- 1st No. 510 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall (Indian Game).
 2nd No. 513 Lindsay, Miss Lizzie Low, Coaltown, Markinch (Modern Game).
 3rd No. 512 Delaney, James, Gateside, Fife (Modern Game).
 V No. 511 Binnie, W., Garth House, Denny (Wyandotte, White).

CLASS 88. BANTAM—Any Variety—Pullet.

- 1st No. 516 Delaney, James, Gateside, Fife (Modern Game).
 2nd No. 515 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall (Indian Game).
 3rd No. 517 Lindsay, Miss Lizzie Low, Coaltown, Markinch (Modern Game).
 V No. 518 Miller, R. Scott, Clydeneuk Poultry Farm, Uddingston (Old English Game).

CLASS 89. ANY OTHER RECOGNISED BREED—Cock.

- 1st No. 525 M'Vicar, Daniel, Crosshill, Lennoxton (Poland, Gold).
 2nd No. 527 Sandison, Alfred, Bakery, Echt (Modern Game).
 3rd No. 520 Binnie, W., Garth House, Denny (Barnvelder).
 V No. 526 Petrie, Alexander, Mayfield, Airth Station, Larbert (Barnvelder).
 H No. 532 Wyllie, Thomas, Glencvan, Beattock (Australorp).
 C No. 523 Elder, Thomas, jun., Links Road, Longniddry (Barnvelder).

CLASS 90. ANY OTHER RECOGNISED BREED—Hen.

- 1st No. 537 Kirkwood, R. A., Camelon Hotel, Falkirk (Brahma, Light).
 2nd No. 538 M'Vicar, Daniel, Crosshill, Lennoxton (Poland, Gold).
 3rd No. 540 Miller, Mrs, The Grange, Muckhart, Dollar (Jersey Giant, Black).
 V No. 541 Sykes, Crossley, Home Park Farm, Inveresk (Jersey Giant, Black).
 H No. 533 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall (Jubilee Indian Game).
 C No. 542 Wilson, William, Ellaslea, Dollar (Australorp).

CLASS 91. ANY OTHER RECOGNISED BREED—Cockerel.

- 1st No. 545 Sykes, Crossley, Home Park Farm, Inveresk (Jersey Giant, Black).

CLASS 92. ANY OTHER RECOGNISED BREED—Pullet.

- 1st No. 548 Sykes, Crossley, Home Park Farm, Inveresk (Jersey Giant, Black).
 2nd No. 547 Hamilton, Thomas, Kirkton Kilns, Bathgate (Frizzle, Buff).

**CLASS 93. PURE-BRED FOWLS FOR LAYING PURPOSES
—Any Heavy Breed—Hen or Pullet.**

- 1st No. 552 Cowe, John, Denhead of Gray, Invergowrie (Hen, Sussex, Light).
 2nd No. 558 Guthrie, J. & M., Commonhead, Kilmarnock (Hen, Wyandotte, White).
 3rd No. 565 Reid, David, Firthview, Portgordon (Hen, Rhode Island Red).
 V No. 562 Minto, The Earl of, Minto Poultry Farm, Hawick (Hen, Sussex, Light).
 H No. 557 Grant-Peterkin, M. J., Grange Hall, Forres (Pullet, Wyandotte, White).
 C No. 556 Grant-Peterkin, M. J., Grange Hall, Forres (Hen, Wyandotte, White).

**CLASS 94. PURE-BRED FOWLS FOR LAYING PURPOSES
—Any Light Breed—Hen or Pullet.**

- 1st No. 581 Ramsay, William, Muirhouse Cottage, Crosshouse (Hen, Leghorn, White).
 2nd No. 572 Brodie, Mrs, Lethen, Nairn (Hen, Leghorn, White).
 3rd No. 575 Dalgleish, James P., of Westgrange, Bogside Station, Alloa (Hen, Ancona, Black and White).
 V No. 578 MacLaren, Thomas, School House, Newton Mearns (Pullet, Leghorn, White).
 H No. 571 Adamson, Fred, Blinkhoolie, Kinross (Hen, Leghorn, Black).
 C No. 577 Guthrie, J. & M., Commonhead, Kilmarnock (Pullet, Leghorn, Brown).

CLASS 95. CROSS-BRED FOWLS FOR LAYING PURPOSES—Hen.

- 1st No. 589 Meikle, John, Camregan, Girvan.
 2nd No. 586 Lamberton, James, Kirkcudbright Farm, Moniaive.
 3rd No. 584 Guthrie, J. & M., Commonhead, Kilmarnock.
 V No. 587 M'Howat, Matthew, Muckcroft, Lennoxton.
 H No. 588 MacLaren, Thomas, School House, Newton Mearns.
 C No. 582 Binnie, W., Garth House, Denny.

**CLASS 96. CROSS-BRED FOWLS FOR LAYING PURPOSES
—Pullet.**

- 1st No. 593 Binnie, W., Garth House, Denny.
 2nd No. 596 Morgan, William, Balcurvie, Windygates.
 3rd No. 594 Cowe, John, Denhead of Gray, Invergowrie.
 V No. 598 Wilkie, John, Orr Bridge Poultry Farm, Dysart.
 H No. 597 Ramsay, William, Muirhouse Cottage, Crosshouse.

CLASS 97. DUCKS—Aylesbury—Drake.

- 1st No. 601 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 602 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 3rd No. 603 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 V No. 600 Dickinson, W. B., Longcroft, Oxtou.
 C No. 599 Dalgleish, James P., of Westgrange, Bogside Station, Alloa.
 C No. 604 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 C No. 605 Kirkwood, R. A., Camelon Hotel, Falkirk.

CLASS 98. DUCKS—Aylesbury—Duck.

- 1st No. 609 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 612 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 3rd No. 610 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 V No. 611 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 C No. 607 Dickinson, W. B., Longcroft, Oxtou.
 C No. 608 Dickinson, W. B., Longcroft, Oxtou.
 C No. 613 Kirkwood, R. A., Camelon Hotel, Falkirk.

CLASS 99. DUCKS—Aylesbury—Drake (Young).

- 1st No. 616 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 617 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 3rd No. 619 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 V No. 618 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 C No. 615 Dickinson, W. B., Longcroft, Oxtou.

CLASS 100. DUCKS—Aylesbury—Duck (Young).

- 1st No. 622 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 623 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 3rd No. 625 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 V No. 624 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 C No. 621 Dickinson, W. B., Longcroft, Oxtou.

CLASS 101. DUCKS—Orpington—Drake.

- 1st No. 627 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 629 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 3rd No. 628 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 V No. 630 Kirkwood, R. A., Camelon Hotel, Falkirk.
 C No. 626 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.

CLASS 102. DUCKS—Orpington—Duck.

- 1st No. 633 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 631 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 3rd No. 634 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 V No. 632 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.

CLASS 103. DUCKS—Orpington—Drake (Young).

- 1st No. 637 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 636 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 3rd No. 635 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 V No. 638 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.

CLASS 104. DUCKS—Orpington—Duck (Young).

- 1st No. 641 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 640 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 3rd No. 639 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.
 V No. 642 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream.

CLASS 105. DUCKS—Indian Runner—Drake.

- 1st No. 648 Young, John, Station House, Dirleton.
 2nd No. 643 Argo, Fred, Bructor, Inverurie.
 3rd No. 647 Shewan, Alexander, South Percyhorner, Fraserburgh.
 V No. 646 Hamilton, Thomas, Kirkton Kilns, Bathgate.
 C No. 644 Dalgleish, James P., of Westgrange, Bogside Station, Alloa.
 C No. 645 Dalgleish, James P., of Westgrange, Bogside Station, Alloa.

CLASS 106. DUCKS—Indian Runner—Duck.

- 1st No. 653 Young, John, Station House, Dirleton.
 2nd No. 649 Argo, Fred, Bructor, Inverurie.
 3rd No. 650 Dalgleish, James P., of Westgrange, Bogside Station, Alloa.
 V No. 651 Dalgleish, James P., of Westgrange, Bogside Station, Alloa.
 C No. 652 Shewan, Alexander, South Percyhorner, Fraserburgh.

CLASS 107. DUCKS—Any other Variety—Drake.

- 1st No. 654 Churchill, Captain Spencer, Northwick Park, Blockley, Worcestershire (Khaki Campbell).
 2nd No. 656 Shaw, D., & Son, Waterfoot, Busby (Rouen).
 3rd No. 655 Connal, James K., Craighead House, Thornhill, Stirling (Pekin Mammoth).

CLASS 108. DUCKS—Any other Variety—Duck.

- 1st No. 658 Churchill, Captain Spencer, Northwick Park, Blockley, Worcestershire (Khaki Campbell).
 2nd No. 660 Shaw, D., & Son, Waterfoot, Busby (Rouen).
 V No. 659 Connal, James K., Craighead House, Thornhill, Stirling (Pekin Mammoth).

CLASS 109. GEESE—Gander.

- 1st No. 661 Rottenburg, F. A., Lochlane, Crieff.
 2nd No. 662 Shewan, Alexander, South Percyhorner, Fraserburgh.

CLASS 110. GEESE—Goose.

- 1st No. 663 Rottenburg, F. A., Lochlane, Crieff.
 2nd No. 664 Shewan, Alexander, South Percyhorner, Fraserburgh.

CLASS 111. TURKEYS—Cock.

- 1st No. 669 Shewan, Alexander, South Percyhorner, Fraserburgh.
 2nd No. 668 Rottenburg, F. A., Lochlane, Crieff.
 3rd No. 666 Connal, James K., Craighead House, Thornhill, Stirling.

CLASS 112. TURKEYS—Hen.

- 1st No. 673 Rottenburg, F. A., Lochlane, Crieff.
 2nd No. 674 Shewan, Alexander, South Percyhorner, Fraserburgh.
 3rd No. 670 Connal, James K., Craighead House, Thornhill, Stirling.
 V No. 671 Hamilton, Thomas, Kirkton Kilns, Bathgate.

TABLE POULTRY.**CLASS 113. (a) TABLE FOWLS—Any Pure Breed—Cockerel.**

- 1st No. 676 Binnie, W., Garth House, Denny (Wyandotte, White).
 2nd No. 685 Mechie, John, Upper Green, Auchtermuchty (Dorking, Silver).
 3rd No. 683 Fulton, John, Lauder Place, East Linton (Sussex).
 V No. 675 Ardern, Lawrence, The Grove, Landulph, Hatt, Cornwall (Indian Game).
 C No. 686 Robertson, John, Craigend, Dundas Castle, South Queensferry (Rhode Island Red).
 C No. 689 Wilkie, John, Orr Bridge Poultry Farm, Dysart (Plymouth Rock).

CLASS 114. TABLE FOWLS—Any Pure Breed—Pair of Pullets.

- 1st No. 693 Fulton, John, Lauder Place, East Linton (Sussex).
 2nd No. 691 Black, William A. P., Croftfoot, Old Polmont (Sussex).
 3rd No. 690 Binnie, W., Garth House, Denny (Wyandotte, White).
 V No. 698 Wilkie, John, Orr Bridge Poultry Farm, Dysart (Sussex, Light).
 C No. 692 Cowe, John, Denhead of Gray, Invergowrie (Rhode Island Red).
 C No. 696 Robertson, John, Craigend, Dundas Castle, South Queensferry (Rhode Island Red).
 C No. 699 Wilkie, John, Orr Bridge Poultry Farm, Dysart (Indian Game).

CLASS 115. TABLE FOWLS—Game Cross—Cockerel.

- 1st No. 702 Churchill, Captain Spencer, Northwick Park, Blockley, Worcestershire (Indian Game—Light Sussex).
 2nd No. 701 Black, William A. P., Croftfoot, Old Polmont (Sussex—Indian Game).
 3rd No. 700 Black, William A. P., Croftfoot, Old Polmont (Sussex—Indian Game).
 V No. 703 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream (Game—Sussex).

CLASS 116. TABLE FOWLS—Game Cross—Pair of Pullets.

- 1st No. 706 Churchill, Captain Spencer, Northwick Park, Blockley, Worcestershire (Indian Game—Light Sussex).
 2nd No. 704 Black, William A. P., Croftfoot, Old Polmont (Sussex—Indian Game).
 3rd No. 705 Black, William A. P., Croftfoot, Old Polmont (Sussex—Indian Game).
 V No. 708 Wilkie, John, Orr Bridge Poultry Farm, Dysart (Indian Game—Sussex, Light).
 C No. 707 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream (Game—Orpington).

CLASS 117. TABLE FOWLS—Any other Cross—Cockerel.

- 1st No. 711 Morgan, William, Balcurvie, Windygates (Wyandotte, Golden—Wyandotte, White).
 2nd No. 713 Wilkie, John, Orr Bridge Poultry Farm, Dysart (Sussex—Wyandotte).
 3rd No. 712 Wilkie, John, Orr Bridge Poultry Farm, Dysart (Sussex—Wyandotte).
 V No. 710 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream (Sussex—Orpington).
 C No. 709 Black, William A. P., Croftfoot, Old Polmont (Dorking—Sussex).

CLASS 118. TABLE FOWLS—Any other Cross—Pair of Pullets.

- 1st No. 717 Wilkie, John, Orr Bridge Poultry Farm, Dysart (Sussex—Wyandotte).
 2nd No. 718 Wilkie, John, Orr Bridge Poultry Farm, Dysart (Sussex—Wyandotte).
 3rd No. 715 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream (Sussex—Orpington).
 V No. 716 Morgan, William, Balcurvie, Windygates (Wyandotte, Golden—Wyandotte, White).
 C No. 714 Black, William A. P., Croftfoot, Old Polmont (Orpington—Sussex).

CLASS 119. (b) DUCKLINGS for Table Purposes—Any Breed or Cross—Pair of Ducklings.

- 1st No. 722 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream (Aylesbury).
 2nd No. 724 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream (Aylesbury).
 3rd No. 723 Huntly, James, & Son, Hirsell Poultry Farm, Coldstream (Aylesbury).
 V No. 721 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline (Aylesbury).

FUR-PRODUCING RABBITS

First Premium—*Fifteen Shillings*. Second Premium—*Ten Shillings*. Third Premium—*Five Shillings*. In each Class in which there are less than four entries the Third Prize of Five Shillings will not be awarded.

CLASS 1. BLUE BEVEREN—Buck.

- 1st No. 4 M'Kelvie, G. D., Roselea, Bowling Green Street, Methil.
- 2nd No. 8 Sloan, Mrs G. C., Balleny, Balerno.
- 3rd No. 9 Sloan, Mrs G. C., Balleny, Balerno.
- V No. 3 Hogg, Miss M. M., The Border Rabbitry, Fireburnmill, Coldstream.
- H No. 7 Scott & Philp, Lochleven Rabbitry, Kinross.
- C No. 6 Reddie, William, School Lane, Charlestown, Fife.

CLASS 2. BLUE BEVEREN—Doe.

- 1st No. 19 Scott & Philp, Lochleven Rabbitry, Kinross.
- 2nd No. 22 Wemyss, Lady Victoria, Home Farm, East Wemyss.
- 3rd No. 18 Scott & Philp, Lochleven Rabbitry, Kinross.
- V No. 15 Heiton, Mrs G., and Miss L. Graham-Montgomery, Cairnleith Fur Farm, Arnbank, Crieff.
- H No. 17 Reddie, William, School Lane, Charlestown, Fife.
- C No. 13 Andrews, R. W., 100 North High Street, Musselburgh.

CLASS 3. BLUE BEVEREN—Buck or Doe, under 5 months at first day of Show.

- 1st No. 41 Sloan, Mrs G. C., Balleny, Balerno (Buck).
- 2nd No. 30 Newbigging, William, Broomvale, Corstorphine (Doe).
- 3rd No. 25 Heiton, Mrs G., and Miss L. Graham-Montgomery, Cairnleith Fur Farm, Arnbank, Crieff (Doe).
- V No. 28 Macniven, Miss Maureen I., The Bank House, Fort William (Buck).
- H No. 36 Scott & Philp, Lochleven Rabbitry, Kinross (Doe).
- C No. 26 Hogg, Miss M. M., The Border Rabbitry, Fireburnmill, Coldstream (Buck).

CLASS 4. CHINCHILLA—Buck.

- 1st No. 49 Graham, Mrs E. Balfour, Levenbank, Leven.
- 2nd No. 51 Macrae, Mrs, Galloway Rabbitries, Longcastle, Whauphill.
- 3rd No. 65 Wardrop, James, 291 High Street, Kirkcaldy.
- V No. 56 Newbigging, William, Broomvale, Corstorphine.
- H No. 58 Ritchie, A., jun., Brownhill House, Dalry, Ayrshire.
- C No. 53 Moffat, Mrs J., Viewforth Rabbitry, Newmills, Fife.

CLASS 5. CHINCHILLA—Doe.

- 1st No. 83 Wemyss, Lady Victoria, Home Farm, East Wemyss.
- 2nd No. 82 Wardrop, James, 291 High Street, Kirkcaldy.
- 3rd No. 67 Aird, Miss, 10 Somerset Road, Ayr.
- V No. 81 Wardrop, James, 291 High Street, Kirkcaldy.
- H No. 74 M'William, Peter A., 43 Craiglea Drive, Edinburgh.
- C No. 66 Aberdeen and Temair, The Marchioness of, House of Cromar, Tarland.
- C No. 77 Paterson, Colin W., Edgemont, 22 Chalmers Road, Ayr.

CLASS 6. CHINCHILLA—Buck or Doe, under 5 months at first day of Show.

- 1st No. 118 Wardrop, James, 291 High Street, Kirkcaldy (Doe).
 2nd No. 102 Macrae, Mrs, Galloway Rabbitries, Longcastle, Whaunhill (Buck).
 3rd No. 124 Wemyss, Lady Victoria, Home Farm, East Wemyss (Doe).
 V No. 99 Kerr, E., Lilybank, Lesmahagow (Buck).
 H No. 98 Hogg, Miss M. M., The Border Rabbitry, Fireburnmill, Coldstream (Buck).
 C No. 92 Graham, Mrs E. Balfour, Levenbank, Leven (Buck).
 C No. 103 M'William, Peter A., 43 Craiglea Drive, Edinburgh (Doe).

CLASS 7. HAVANA—Buck or Doe.

- 1st No. 129 Heiton, Mrs G., and Miss L. Graham-Montgomery, Cairnleith Fur Farm, Arnbank, Crieff (Doe).
 2nd No. 132 Scott & Philp, Lochleven Rabbitry, Kinross (Doe).
 3rd No. 131 Scott & Philp, Lochleven Rabbitry, Kinross (Buck).

CLASS 8. LILAC—Buck or Doe.

- 1st No. 140 Wood, John, Moor Hall, Madeley, Crewe (Doe).
 2nd No. 138 Nicolson, A. B., Glenbervie House, Drumlithie (Buck).
 3rd No. 134 Heiton, Mrs G., and Miss L. Graham-Montgomery, Cairnleith Fur Farm, Arnbank, Crieff (Buck).
 V No. 139 Smith, Charles L., 25 Monk's Road, Winchester (Buck).

CLASS 9. ANGORA—Buck or Doe.

- 1st No. 150 Gunn, Mrs C. M., Richmond House, Windsor Place, Portobello (Buck).
 2nd No. 149 Gunn, Mrs C. M., Richmond House, Windsor Place, Portobello (Buck).
 3rd No. 151 Gunn, Mrs C. M., Richmond House, Windsor Place, Portobello (Buck).
 V No. 155 MacRae, Donald, Muirneag, Aberdour Road, Dunfermline (Buck).
 H No. 147 Graham, Mrs E. Balfour, Levenbank, Leven (Doe).
 C No. 153 Hogg, Miss M. M., The Border Rabbitry, Fireburnmill, Coldstream (Doe).
 C No. 163 Watson, Rupert G., Fenton Rabbitries, Drem (Doe).

CLASS 10. Any other Variety of FUR-PRODUCING RABBIT—Buck or Doe.

- 1st No. 176 Pringle, J. S., East Farm, Killingworth, Northumberland (Argente de Champagne, Buck).
 2nd No. 175 Monteith, Major B. J., Cranley, Carstairs (Black Alaska, Buck).
 3rd No. 183 Wemyss, Lady Victoria, Home Farm, East Wemyss (Dark Sable, Doe).
 V No. 177 Scott & Philp, Lochleven Rabbitry, Kinross (Tan, Doe).
 H No. 180 Skinner, Thomas S., 20 Windmill Road, Kirkcaldy (English, Doe).
 C No. 184 Wemyss, Lady Victoria, Home Farm, East Wemyss (Dark Sable, Buck).

HONEY, &c.

Should there be in any class three or less than three entries, the value of the first prize will be reduced to that of the second, the second to that of the third, and no third prize will be awarded.

OPEN CLASSES.

Silver Medals will be awarded by the Scottish Bee-Keepers' Association to the First and Second winners of the greatest number of points in Classes 4 to 21, calculated on the following basis: 1st prize, 3 points; 2nd prize, 2 points; 3rd prize, 1 point.

Equal { Brown, Thomas C., Helenslea, St Ninians, Stirling (22 points).
Yuille, David, Burns Avenue, Kilmarnock (22 points).

Championship Cup, value £5. 5s. This Cup has been gifted by the Rev. John Beveridge, M.B.E., B.D., Gartmore.

Joint-winners { Brown, Thomas C., Helenslea, St Ninians, Stirling (22 points).
Yuille, David, Burns Avenue, Kilmarnock (22 points).

CLASS 1. Collection of APPLIANCES suitable for a beginner's outfit for Bee-keeping. A card naming all the articles, along with the price at which they will be supplied for one year from date, to be fixed to the exhibit.—PREMIUMS, 20s., 15s., 10s.

1st No. 1 Steele, R., & Brodie, Bee Appliance Works, Wormit, Fife.

CLASS 2. Best and most complete FRAME HIVE for general use, with any improvements. Unpainted.—PREMIUMS, 20s., 15s., 10s.

1st No. 3 Steele, R., & Brodie, Bee Appliance Works, Wormit, Fife.
2nd No. 2 Ogilvie, J. & A., 369 Union Street, Aberdeen.

CLASS 3. Best and most complete HIVE. Unpainted. Price not to exceed 35s.—PREMIUMS, 20s., 15s., 10s.

1st No. 4 Steele, R., & Brodie, Bee Appliance Works, Wormit, Fife.

CLASS 4. Six Sections of COMB HONEY, excluding Heather Honey.—PREMIUMS, 20s., 15s., 10s.

1st No. 6 Brown, Alexander, Burnside Cottage, Melrose.
2nd No. 10 Hutton, Miss Agnes M., Gibliston, Kilconquhar.
3rd No. 8 Elliot, Matthew, 42 Ardconnel Street, Inverness.
V No. 11 Leckie, Robert Westlands, The Manse, Davidson's Mains, Edinburgh.
H No. 7 Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 5. Six Sections of HEATHER HONEY.
—PREMIUMS, 20s., 15s., 10s.

1st No. 18 Pate, Thomas, Hopefield, Milnathort.
2nd No. 17 Elliot, Matthew, 42 Ardconnel Street, Inverness.
3rd No. 15 Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 6. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY, approximate weight 6 lb.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 32 Yuille, David, Burns Avenue, Kilmarnock.
- 2nd No. 29 Walker, John J., 53 Main Street, Kilmaurs, Ayrshire.
- 3rd No. 21 Caldwell, David, Lealoean, Darvel.
- V No. 25 Pate, Thomas, Hopefield, Milnathort.
- H No. 20 Brown, Thomas C., Helenslea, St Ninians, Stirling.
- C No. 19 Brown, Alexander, Burnside Cottage, Melrose.

CLASS 7. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey, approximate weight 6 lb.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 40 Yuille, David, Burns Avenue, Kilmarnock.
- 2nd No. 39 Scott, George, Waterton, Cumnock.
- 3rd No. 33 Brown, Thomas C., Helenslea, St Ninians, Stirling.
- V No. 34 Cochran, James, 18 Dundonald Road, Kilmarnock.

CLASS 8. Six Jars of PRESSED HEATHER HONEY in liquid form, approximate weight 6 lb.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 48 Yuille, David, Burns Avenue, Kilmarnock.
- 2nd No. 46 Scott, George, Waterton, Cumnock.
- 3rd No. 44 Durward, John, Priestland, Darvel.
- V No. 43 Cochran, James, 18 Dundonald Road, Kilmarnock.
- H No. 42 Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 9. Six Jars of GRANULATED HONEY, approximate weight 6 lb.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 57 Yuille, David, Burns Avenue, Kilmarnock.
- 2nd No. 50 Brown, Alexander, Burnside Cottage, Melrose.
- 3rd No. 55 Pate, Thomas, Hopefield, Milnathort.

CLASS 10. Two Shallow Frames of COMB HONEY for extracting purposes.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 60 Brown, Thomas C., Helenslea, St Ninians, Stirling.
- 2nd No. 59 Brown, Alexander, Burnside Cottage, Melrose.

CLASS 11. PRODUCTS made with the aid of Honey.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 67 Brown, Thomas C., Helenslea, St Ninians, Stirling.
- 2nd No. 66 Brown, Alexander, Burnside Cottage, Melrose.

CLASS 12. Best display of HONEY in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet. Weight of Honey not to exceed 100 lb.—PREMIUMS, 60s., 30s., 20s.

- 1st No. 68 Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 13. Best display of HONEY in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet. Weight of Honey not to exceed 40 lb.—PREMIUMS, 60s., 30s., 20s.

- 1st No. 71 Pate, Thomas, Hopefield, Milnathort.
 2nd No. 70 Hutton, Miss Agnes M., Gibliston, Kilconquhar.
 3rd No. 69 Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 14. Best exhibit of not less than 1 lb. of WAX in any form.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 84 Yuille, David, Burns Avenue, Kilmarnock.
 2nd No. 73 Brown, Thomas C., Helenslea, St Ninians, Stirling.
 3rd No. 74 Cochran, James, 18 Dundonald Road, Kilmarnock.
 V No. 75 Fernie, William, Westfield Avenue, Cupar.
 H No. 83 Walker, John J., 53 Main Street, Kilmaurs, Ayrshire.
 C No. 81 Thomson, Miss M., 4 Burn Street, Dalbeattie.

CLASS 15. Best exhibit of not less than 1 lb. of WAX made into shapes for retail trade and over-counter trade. Convenience in packing to be taken into consideration.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 87 Cunningham, John, 51 George Street, Bonhill.
 2nd No. 85 Brown, Thomas C., Helenslea, St Ninians, Stirling.
 3rd No. 91 Yuille, David, Burns Avenue, Kilmarnock.
 V No. 88 Fernie, William, Westfield Avenue, Cupar.
 H No. 86 Cochran, James, 18 Dundonald Road, Kilmarnock.

CLASS 16. OBSERVATORY HIVE with Queen and Bees.—PREMIUMS, 50s., 30s., 15s.

- 1st No. 102 Yuille, David, Burns Avenue, Kilmarnock.
 2nd No. 99 Hutton, William A., 92 St Leonards Street, Dunfermline.
 3rd No. 101 Todd, James, 65 Torrisdale Street, Glasgow, S. 2.
 V, No. 100 Ogilvie, J. & A., 369 Union Street, Aberdeen.
 C No. 93 Brown, Alexander, Burnside Cottage, Melrose.
 C No. 94 Brown, John, Eildon View, Melrose.
 C No. 95 Brown, Thomas C., Helenslea, St Ninians, Stirling.

CONFINED TO SCOTTISH EXHIBITORS.

CLASS 17. One Standard Frame of COMB HONEY for extracting purposes.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 104 Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 18. Six Sections of COMB HONEY, excluding Heather Honey.—PREMIUMS, 20s., 15s., 10s.

- 1st No. 121 Pate, Thomas, Hopefield, Milnathort.
 2nd No. 123 White, A., Sunnyhill, Old Cumnock.
 3rd No. 111 Brown, Alexander, Burnside Cottage, Melrose.
 C No. 113 Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 19. Six Sections of HEATHER HONEY.

—PREMIUMS, 30s., 20s., 10s.

- 1st No. 127 Moir, George, 22 Kirkhill Road, Edinburgh.
 2nd No. 124 Brown, Thomas C., Helenslea, St Ninians, Stirling.
 3rd No. 126 Elliot, Matthew, 42 Ardconnel Street, Inverness.

CLASS 20. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey, approximate weight 6 lb.—PREMIUMS, 30s., 20s., 10s.

- 1st No. 135 White, A., Sunnyhill, Old Cumnock.
 2nd No. 129 Allan, George C., 8 Ballantine Drive, Ayr.
 3rd No. 130 Brown, Thomas C., Helenslea, St Ninians, Stirling.
 V No. 132 Hutton, Miss Agnes M., Gibliston, Kilconquhar.
 H No. 134 Pate, Thomas, Hopefield, Milnathort.

CLASS 21. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY, approximate weight 6 lb.—PREMIUMS, 30s., 20s., 10s.

- 1st No. 150 Yuille, David, Burns Avenue, Kilmarnock.
 2nd No. 148 Walker, John J., 53 Main Street, Kilmaurs, Ayrshire.
 3rd No. 147 Scott, George, Waterton, Cumnock.
 V No. 139 Brown, Thomas C., Helenslea, St Ninians, Stirling.
 H No. 145 Pate, Thomas, Hopefield, Milnathort.
 C No. 142 Harper, Robert, Linplum Cottages, Haddington.

DAIRY PRODUCE

CLASS 1. POWDERED BUTTER, not less than 3 lb.—PREMIUMS, £4, £2, and £1.

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| 1st No. | 6 | Fleming, Andrew, Threepland, Eaglesham. |
| 2nd No. | 1 | Bowie, John K., Newfield, Stranraer. |
| 3rd No. | 8 | Monteith, Mrs, The Island, Bothkennar, Falkirk. |
| V No. | 9 | Ramage, Mrs James, Lathallan Road, Polmont. |
| H No. | 11 | Rennie, Miss, Parkhead, Slamannan. |

CLASS 2. FRESH BUTTER, Three 1-lb. Rolls,— PREMIUMS, £4, £2, and £1.

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| 1st No. | 24 | Monteith, Mrs, The Island, Bothkennar, Falkirk. |
| 2nd No. | 30 | Shanks, Miss, Broomhill, Denny. |
| 3rd No. | 32 | Steel, David, Lodge Farm, Slamannan. |
| V No. | 29 | Rennie, Miss, Parkhead, Slamannan. |
| H No. | 26 | Ramage, Mrs James, Lathallan Road, Polmont. |

CLASS 3. CHEDDAR CHEESE, 56 lb. and upwards —PREMIUMS, £9, £5, £3, £2, and £1.

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| 1st No. | 40 | Dean, William, Cairniehill, Borgue. |
| 2nd No. | 38 | Connell, James L., East Hillhouse, Riccarton. |
| 3rd No. | 36 | Borland, John, Slagshaw Dairy, Castle Douglas. |
| 4th No. | 41 | Dunlop, George, Craigraploch, Castle Douglas. |
| 5th No. | 53 | M'Dowall, George, South Boreland, Dunragit. |
| V No. | 37 | Borland, John, jun., Auchlane Dairy, Castle Douglas. |
| H No. | 56 | M'Minn, Samuel, Torrs Dairy, Kirkcudbright. |
| C No. | 49 | MacCaig, Allan W., Belmont, Stranraer. |

CLASS 4. CHEESE, 14 lb. and under.—PREMIUMS, £5, £3, £2, and £1.

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| 1st No. | 65 | Dean, William, Cairniehill, Borgue. |
| 2nd No. | 77 | M'Dowall, George, South Boreland, Dunragit. |
| 3rd No. | 72 | Hyslop, S., Ross Dairy, Borgue. |
| 4th No. | 79 | M'Kerrow, Robert, Damhouse, Kirkcolm, Stranraer. |
| V No. | 80 | M'Minn, Samuel, Torrs Dairy, Kirkcudbright. |
| H No. | 78 | M'Harg, John, Barbeth, Leswalt, Stranraer. |
| C No. | 63 | Connell, James L., East Hillhouse, Riccarton. |

WOOL

PURE BREED CLASSES.

CLASS 1. BLACKFACE WOOL—EWE. Three Fleeces.
—PREMIUMS, £3, £2, and £1.

- 1st No. 13 Thompson, William, Elibank, Walkerburn.
- 2nd No. 1 Barbour, William, Strathdee, Kirkcudbright.
- 3rd No. 6 Lees, William, Mid Lix, Killin.

CLASS 2. BLACKFACE WOOL—HOGG. Three
Fleeces.—PREMIUMS, £3, £2, and £1.

- 1st No. 26 Thompson, William, Elibank, Walkerburn.
- 2nd No. 19 Lees, William, Mid Lix, Killin.
- 3rd No. 16 Dickinson, R. & W. B., Longcroft, Oxten.

CLASS 3. CHEVIOT WOOL—EWE. Three Fleeces.
—PREMIUMS, £3, £2, and £1.

- 1st No. 34 Oliver, Thomas, Greenbanks, Hawick.
- 2nd No. 35 Oliver, Thomas, Greenbanks, Hawick.
- 3rd No. 28 Elliot, Robert T., Chatto, Kelso.

CLASS 4. CHEVIOT WOOL—HOGG. Three
Fleeces.—PREMIUMS, £3, £2, and £1.

- 1st No. 42 Oliver, Thomas, Greenbanks, Hawick.
- 2nd No. 37 Elliot, Robert T., Chatto, Kelso.
- 3rd No. 38 Elliot, Thomas R., Attonburn, Kelso.

CLASS 5. BORDER LEICESTER WOOL—EWE.
Three Fleeces.—PREMIUMS, £3, £2, and £1.

- 1st No. 45 Templeton, T. & M., Sandyknowe, Kelso.
- 2nd No. 46 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 6. BORDER LEICESTER WOOL—HOGG.
Three Fleeces.—PREMIUMS, £3, £2, and £1.

- 1st No. 49 Templeton, T. & M., Sandyknowe, Kelso.
- 2nd No. 48 Melrose, Adam J., Heavyside, Biggar.

CLASS 7. HALF-BRED WOOL—EWE. Three
Fleeces.—PREMIUMS, £3, £2, and £1.

- 1st No. 55 Brown, John C., Hundalee, Jedburgh.
- 2nd No. 54 Brown, John C., Hundalee, Jedburgh.
- 3rd No. 53 Brown, John C., Hundalee, Jedburgh.

CLASS 8. HALF-BRED WOOL—HOGG. Three
Fleeces.—PREMIUMS, £3, £2, and £1.

- 1st No. 59 Brown, John C., Hundalee, Jedburgh.
2nd No. 61 Crawford, William, Hatton Mains, Kirknewton.
3rd No. 58 Brown, John C., Hundalee, Jedburgh.

CLASS 9. SHETLAND WOOL—EWE. Three
Fleeces.—PREMIUMS, £3, £2, and £1.

- 1st No. 70 Campbell, Mrs M. E., Dolphinton House, Dolphinton.
2nd No. 69 Campbell, Mrs M. E., Dolphinton House, Dolphinton.

CLASS 10. SHETLAND WOOL—HOGG. Three
Fleeces.—PREMIUMS, £3, £2, and £1.

- 1st No. 73 Campbell, Mrs M. E., Dolphinton House, Dolphinton.
2nd No. 72 Campbell, Mrs M. E., Dolphinton House, Dolphinton.

RURAL INDUSTRIES

OPEN CLASSES.

SHETLAND KNITTING.

CLASS 1. FINE LACE GOODS.—PREMIUMS, £3, £2, and £1.

- 1st No. 4 Clark, Miss M., Newgord, Westing, Uyeasound, Shetland (Scarf).
 2nd No. 16 Sinclair, Miss A., Swanks, Fetlar, Shetland (Scarf).
 3rd No. 5 Edwardson, Miss K., The Morrens, Westing, Uyeasound, Shetland (Scarf).
 V No. 3 Clark, Miss M., Newgord, Westing, Uyeasound, Shetland (Scarf).
 H No. 13 Jamieson, Miss M., Gerriegarth, Baltasound, Shetland (Shawl).
 C No. 11 Hunter, Mrs J., Muness, Uyeasound, Unst, Shetland (Scarf).

CLASS 2. JUMPER, SPORTS COAT, or DRESS—one or more Colours.—PREMIUMS, £3, £2, and £1.

- 1st No. 25 Dalziel, Miss A., Tait's Buildings, Commercial Road, Lerwick (Jumper Suit).
 2nd No. 28 Henderson, Miss A., North, Levenwick, Shetland (Jumper—Gent's).
 3rd No. 35 Laurensen, Miss G. B., Maywick, Bigton, Shetland (Jumper).
 V No. 39 Priest, Miss C., Millfield, Haroldswick, Lerwick (Jumper).
 H No. 32 Jamieson, Miss M., Tumlin, Bixter, Shetland (Sleeveless Coat).
 C No. 31 Jamieson, Miss H. S., Gerriegarth, Baltasound, Shetland (Dress).
 C No. 33 Jamieson, Miss M. C., Maywick, Bigton, Shetland (Jumper).
 C No. 38 M'Skimming, Miss Grace, The Manse, Blyth Bridge, Dolphinton (Jumper).

CLASS 3. JUMPER or SPORTS COAT—all over Fair Isle.—PREMIUMS, £3, £2, and £1.

- 1st No. 48 Alexander-Sinclair, Miss Stroma, Dunbeath Castle, Caithness (Jumper).
 2nd No. 65 Petrie, Miss J., Aithsness, Fetlar, Shetland (Jumper).
 3rd No. 62 Nicolson, Mrs R. M., Burravoe, South Yell, Shetland (Jumper).
 V No. 66 Petrie, Miss J., Aithsness, Fetlar, Shetland (Jumper).
 H No. 49 Anderson, Miss J. C., Easter Leigh, Burravoe, Lerwick (Jumper).
 C No. 52 Duncan, Mrs A., Caverton Mains, Kelso (Jumper).
 C No. 55 Henderson, Mrs J. R., Scousburgh, Shetland (Jumper).
 C No. 68 Sinclair, Miss A., Swanks, Fetlar, Shetland (Jumper).

CLASS 4. OTHER EXHIBITS.—PREMIUMS, £2, £1, and 10s.

- 1st No. 89 Jamieson, Miss M. G., Hubie, Fetlar, Shetland (Waistcoat).
 2nd No. 75 Brown, Miss M. J., Kingland, Ollaberry, Shetland (Shawl).
 3rd No. 88 Jamieson, Miss M. G., Hubie, Fetlar, Shetland (Scarf).
 V No. 92 MacKay, Miss G. P., Mailland, Baltasound, Shetland (Shawl).
 H No. 87 Jamieson, Miss M. G., Hubie, Fetlar, Shetland (Scarf, Fair Isle).
 C No. 94 M'Pherson, Mrs J., Blosta, Cunningsburgh, Lerwick (Knicker Hose).

TWEEDS.**CLASS 5. HARRIS or OTHER TWEED—Hand-spun, Hand-woven, and Vegetable-dyed.—PREMIUMS, £3, £2, and £1.**

- 1st No. 99 MacGregor, R., Paton Street, Inverness.
 2nd No. 102 Murray, Miss M., Tressidy Hill, Lairg.
 3rd No. 103 Robertson, Mrs W., Acheilidh, Rogart.
 V No. 98 MacGregor, R., Paton Street, Inverness.
 H No. 100 Mackenzie, Miss B., East Torbreck, Rogart.

**CLASS 6. TWEED—Mill-spun, Hand-woven.
—PREMIUMS, £3, £2, and £1.**

- 1st No. 106 Hogg, David, 10 High Street, Earlston.
 2nd No. 111 Macdonald, Miss M., Rheanbrick, Lairg.
 3rd No. 113 MacDonald, William, Beulah Villa, Fort Augustus.
 V No. 107 Hogg, David, 10 High Street, Earlston.
 H No. 105 Biermann, Mrs L., Blairich, Rogart.
 C No. 115 MacGregor, R., Paton Street, Inverness.

MISCELLANEOUS.**CLASS 7. HOME-MADE RUG (WOOL).
—PREMIUMS, £3, £2, and £1.**

- 1st No. 148 Morrison, L., Mental Hospital, Riccartonbar, Paisley.
 2nd No. 128 Govan District Board of Control, Hawkhead Asylum, Half-wayhouses, Glasgow.
 3rd No. 156 Purves, Mrs A., Glenkinchie, Pencaitland.
 V No. 145 M'Killop, Miss K., Swinton House, Duns.
 H No. 127 Govan District Board of Control, Hawkhead Asylum, Half-wayhouses, Glasgow.
 C No. 126 Govan District Board of Control, Hawkhead Asylum, Half-wayhouses, Glasgow.
 C No. 155 Pennycate, Mrs E., 28 High Lane, Haslemere.

CLASS 8. EMBROIDERY—White (to be exhibited unwashed).—PREMIUMS, £3, £2, and £1.

- 1st No. 179 Goad, Mrs R., Woodside, Cockermouth (Cushion Cover).
 2nd No. 178 Francis, Miss E. E., 95 Chatsworth Road, Bournemouth (Teacloth).
 3rd No. 188 Purves, Guide N., Guide Headquarters, 13 Melville Street, Edinburgh (Tray Cloth).
 V No. 184 Jamieson, Mrs M. B., Langshaw, Galashiels (Luncheon Cloth).
 H No. 174 Clerkson, Miss I. G., 66 Polwarth Gardens, Edinburgh (Supper Cloth).
 C No. 169 Brown, Mrs W., Free Church Cottage, Coulter, Biggar (Bedspread).
 C No. 171 Bull, Mrs Alice, Admiralty Cottage, Arrochar (Tea Cosy).
 C No. 172 Burns, Miss E. E., Morebattle, Kelso (Camisole).
 C No. 186 Macdonald, Guide M., Guide Headquarters, 13 Melville Street, Edinburgh (Pillow Cover).
 C No. 190 Veitch, Miss M. M., Schoolhouse, Lochgair, Lochfyne (Night-dress).

CLASS 9. EMBROIDERY—Coloured.—PREMIUMS,
£3, £2, and £1.

- 1st No. 218 Hume, Miss M., 6 Castle Street, Duns (Cushion).
 2nd No. 231 Matheson, Miss M. J. L., Glasclune, North Berwick (Table Runner).
 3rd No. 250 Winchester, Mrs A. E., The Manse, Arrochar (Sideboard Cloth).
 V No. 240 Smith, Guide E., Guide Headquarters, 13 Melville Street, Edinburgh (Tray Cloth).
 H No. 244 Stewart, Hon. Lady MacTaggart, Ardwell, Stranraer (Stool Cover).
 C No. 198 Biggam, Mrs H. M., Glenstockadale, Stranraer (Cushion).
 C No. 199 Biggam, Mrs H. M., Glenstockadale, Stranraer (Table Scarf).
 C No. 203 Cleghorn, Guide M., Guide Headquarters, 13 Melville Street, Edinburgh (Bag).
 C No. 208 Edward, Miss M., Nechtan, Letham, Forfarshire (Cushion).
 C No. 222 Macdonald, Miss J., Shieldhill, Biggar (Pochette).
 C No. 230 Matheson, Miss M. J. L., Glasclune, North Berwick (Cushion).
 C No. 233 Mitchell, Mrs R., The Manse, Aberfeldy (Fire Screen Panel).
 C No. 236 Paterson, Mrs J. L., Gowanlea, Strichen, Aberdeenshire (Shawl).

CLASS 10. LEATHER GLOVES.—PREMIUMS,
£2, £1, and 10s.

- 1st No. 257 Dunchurch and Thurlaston Women's Institute, Rugby.
 2nd No. 261 Macdonald, Mrs L., South Lodge, Lydgait, Haddington.
 3rd No. 253 Dunchurch and Thurlaston Women's Institute, Rugby.
 V No. 256 Dunchurch and Thurlaston Women's Institute, Rugby.
 H No. 252 Dunchurch and Thurlaston Women's Institute, Rugby.
 C No. 254 Dunchurch and Thurlaston Women's Institute, Rugby.

CLASS 11. SPECIMEN OF LEATHER WORK OTHER THAN GLOVES.—PREMIUMS, £2, £1, and 10s.

- 1st No. 272 Edward, Miss M., Nechtan, Letham, Forfarshire (Handbag).
 2nd No. 291 Stirton, Miss E. R., Pinkiepens House, Musselburgh (Handbag).
 3rd No. 267 Clement, Miss M., East Pitkierie, Anstruther (Stool).
 V No. 276 Ireland, Miss N. S., Elvan, Rotchell Road, Dumfries (Bag).
 H No. 265 Blair, Miss S. E. B., Mak' Merry Studio, Macmerry, East Lothian (Stool Cover).
 C No. 270 Dunchurch and Thurlaston Women's Institute, Rugby (Cushion).
 C No. 285 Montgomery, Miss L. E., Octavia House, Dumfries (Handbag).
 C No. 290 Stevenson, Mrs L. W., Schoolhouse, Stoneykirk, Stranraer (Bag).

CLASS 12. SPECIMEN OF FURCRAFT.
—PREMIUMS, £2, £1, and 10s.

- 1st No. 293 Allison, Miss M. D., Kinnaird Castle, Brechin (Red Fox Fur).
 2nd No. 297 Dunchurch and Thurlaston Women's Institute, Rugby (Gloves).
 3rd No. 295 Dunchurch and Thurlaston Women's Institute, Rugby (Gloves).
 V No. 296 Dunchurch and Thurlaston Women's Institute, Rugby (Gloves).
 H No. 294 Dunchurch and Thurlaston Women's Institute, Rugby (Gloves).
 C No. 299 Francis, Miss E. E., 95 Chatsworth Road, Bournemouth (Gloves).

CLASS 13. SPECIMEN OF HAND-PAINTED POTTERY.—
PREMIUMS, £2, £1, and 10s.

- 1st No. 309 Mak' Merry Studio, Macmerry, East Lothian (Vase).
 2nd No. 311 Murray, Miss A. M., U.F. Manse, Aberlady (Bowl).
 3rd No. 317 Weir, Mrs H. C., Schoolhouse, Winchburgh (Eastern Water-Bottle).
 V No. 306 Jamieson, Ion C. B., Langshaw, Galashiels (Bowl).
 H No. 320 Wight, Miss B., Mak' Merry Studio, Macmerry, East Lothian (Bowl).
 C No. 307 Mak' Merry Studio, Macmerry, East Lothian (Porridge Set).

CLASS 14. SPECIMEN OF BASKET-WORK (Rafia not eligible).—PREMIUMS, £2, £1, and 10s.

- 1st No. 330 Govan District Board of Control, Hawkhead Asylum, Half-wayhouses, Glasgow (Chair).
 2nd No. 325 Fife Federation Women's Rural Institute, 'Cupar (Cane Basket).
 3rd No. 333 Jamieson, Mrs I. A., Schoolhouse, Aberlady (Tray).
 V No. 327 Gilmour, Miss N. M., Ardmore Farm, Cardross (Cane Basket).
 H No. 328 Govan District Board of Control, Hawkhead Asylum, Half-wayhouses, Glasgow (Chair).
 C No. 334 Leach, Mrs F. W., Wycliffe, 3 Gardner Street, Dunbar (Tray).

CLASS 15. BEST COLLECTION OF VEGETABLE-DYED WOOLS.—PREMIUMS, £2, £1, and 10s.

- 1st No. 343 Murray, Miss M., Tressidy Hill, Lairg.
 2nd No. 341 M'Kenzie, Miss H., Big Sand, Gairloch, Ross-shire.
 3rd No. 340 Hutchison, Miss U. C., The Library, Inval, Haslemere, Surrey.
 V No. 342 M'Kenzie, Mrs K., 41 Big Sand, Gairloch, Ross-shire.

CLASS 16. HOME-SPUN YARN—2-3 cuts.—
PREMIUMS, £2, £1, and 10s.

- 1st No. 354 Henderson, Mrs H., Guddon, Baltasound, Shetland.
 2nd No. 347 Clark, Mrs W., Newgord, Westing, Uyeasound, Shetland.
 3rd No. 367 Petrie, Mrs J., Aithsness, Fetlar, Shetland.
 V No. 370 Sandison, Miss J., Orbister, Hamar, Shetland.
 H No. 364 M'Kenzie, Mrs K., 41 Big Sand, Gairloch, Ross-shire.

CONFINED CLASSES.

Open to Institutes and Members of Institutes in the whole of Scotland.

CLASS 17. CHAMOIS GLOVES.—PREMIUMS, £3, £2, and £1.

- 1st No. 387 Wight, Miss, Mak' Merry Studio, Macmerry, East Lothian.
 2nd No. 378 Macdonald, Mrs L., South Lodge, Lydgait, Haddington.
 3rd No. 380 Mallen, Miss J., Fordel, Dalkeith.
 V No. 379 Macfarlane, Mrs I., Manse of Dull, Aberfeldy.
 H No. 388 Wragg, Miss P. M., Admiralty Cottages, Arrochar.
 C No. 375 Bell, Miss I. M., Wauchope, Bonchester, Hawick.

CLASS 18. SPECIMEN OF FILET LACE.—

PREMIUMS, £3, £2, and £1.

- 1st No. 390 Bell, Miss M., Enterkine, Annbank Station, Ayrshire (Panel).
 2nd No. 403 Winchester, Mrs A. E., The Manse, Arrochar (Supper Cloth).
 3rd No. 389 Barron, Miss H. L., Inchgower, Buckie, Banffshire (Curtain).
 V No. 399 Millar, Miss B. W., Easter Kilmany, Kilmany, Dundee (Altar Cloth).
 H No. 400 Millar, Miss B. W., Easter Kilmany, Kilmany, Dundee (Sideboard Cloth).
 C No. 392 Blair, Miss S. E. B., Mak' Merry Studio, Macmerry, East Lothian (Specimens).

Confined to Institutes and Members of Institutes in the South-Eastern Area of Scottish Women's Rural Institutes.

Special Prizes to the Institutes winning the largest number of prizes in Classes 19 to 27 inclusive. First Prize to count six points, Second Prize five points, Third Prize four points, V.H.C. three points, H.C. two points, and C. one point—£3, £2, and £1.

- 1st Winchburgh Women's Rural Institute (67 points).
 2nd Aberlady Women's Rural Institute (15 points).
 3rd Pathhead Women's Rural Institute (12 points).

CLASS 19. RUG—made from old material.—

PREMIUMS, 20s., 10s., and 5s.

- 1st No. 406 Charters, Mrs, 11 Whitcheater Lane, Newcastleton.
 2nd No. 413 Turnbull, Mrs D., Winchburgh.
 3rd No. 410 Morris, Miss M. J., Garvald, Dolphinton.
 V No. 409 Little, Mrs W., Bemersyde, Newcastleton.
 H No. 414 Turnbull, Mrs D., Winchburgh.
 C No. 415 Wilson, Mrs A., Winchburgh.

CLASS 20. RUG—made from Thrums.—PREMIUMS,

15s., 10s., and 5s.

- 1st No. 420 Winchburgh Women's Rural Institute, Winchburgh.
 2nd No. 417 Kelly, Mrs J., Winchburgh.
 3rd No. 419 Thomson, Miss J. A., Borthwick Castle, Gorebridge.

CLASS 21. SOCKS—4-ply fingering.—PREMIUMS,

10s., 6s., and 4s.

- 1st No. 429 Mackenzie, Mrs K., Winchburgh.
 2nd No. 435 Reid, Mrs, Winchburgh.
 3rd No. 434 Reid, Mrs, Winchburgh.
 V No. 426 Howden, Miss B. W., Elliston, St Boswells.
 H No. 421 Baxter, Mrs, East Hermiston, Currie.
 C No. 424 Duncan, Mrs D., Winchburgh.
 C No. 432 Paterson, Mrs T., Winchburgh.

CLASS 22. SISAL CORD STOOL.—PREMIUMS,
15s., 10s., and 5s.

- 1st No. 445 Mallen, Miss J., Fordel, Dalkeith.
 2nd No. 440 Baird, Lady Hersey, Lennoxlove, Haddington.
 3rd No. 449 Weir, Mrs H. C., Schoolhouse, Winchburgh.
 V No. 447 Newlands Rural Institute, Newlands Schoolhouse, West Linton.
 H No. 450 Young, Mrs A. C., Edinburgh Road, Tranent.
 C No. 443 Cuthbert, Mrs, Mayville, Aberlady.

CLASS 23. LEATHER HANDBAG.—PREMIUMS,
20s., 10s., and 5s.

- 1st No. 464 Weir, Mrs H. C., Schoolhouse, Winchburgh.
 2nd No. 455 Herdman, Mrs N., Southside, Gorebridge.
 3rd No. 462 Sharp, Mrs, Horsburgh Castle, Peebles.
 V No. 453 Gray, Miss Jean, Winchburgh.
 H No. 461 Pringle, Miss I., 2 Harvieston Terrace, Gorebridge.
 C No. 454 Gray, Miss Meg, Winchburgh.

CLASS 24. COLOURED EMBROIDERY—Woollen.—
PREMIUMS, 15s., 10s., and 5s.

- 1st No. 468 Weir, Mrs H. C., Schoolhouse, Winchburgh (Footstool).
 2nd No. 466 Blair, Miss S. E. B., Mak' Merry Studio, Macmerry, East Lothian (Handbag).
 3rd No. 465 Allan, Miss E., Dean Park, Craigleith, Edinburgh (Panel for Screen).
 V No. 467 Herdman, Mrs N., Southside, Gorebridge (Bag).
 H No. 469 Weir, Mrs H. C., Schoolhouse, Winchburgh (Footstool).

CLASS 25. COLOURED EMBROIDERY—Needle-Weaving.
—PREMIUMS, 15s., 10s., and 5s.

- 1st No. 475 Stott, Miss, Longniddry (Towel).
 2nd No. 470 Barclay, Miss E., Aberlady Mains, Aberlady (Cushion).
 3rd No. 471 Gray, Miss Jean, Winchburgh (Cushion).
 V No. 476 Voyle, Mrs, Bayview, Aberlady (Sideboard Cloth).
 H No. 472 Gray, Miss Meg, Winchburgh (Nightdress Case).
 C No. 474 Reid, Miss M. D., Manor Place, Aberlady (Table Scarf).

CLASS 26. WADDED QUILT—home-made.—
PREMIUMS, 20s., 10s., and 5s.

- V No. 478 Davidson's Mains Women's Rural Institute, Woodside Cottage, Quality Street, Davidson's Mains, Edinburgh.

CLASS 27. WOOLLEN QUILT—home-made.—
PREMIUMS, 20s., 10s., and 5s.

- 1st No. 483 Mallen, Miss J., Fordel, Dalkeith.
 2nd No. 481 Jamieson, Mrs I. A., Schoolhouse, Aberlady.
 3rd No. 480 Douglas, Mrs A. B., 5 Viewforth Terrace, Edinburgh.
 V No. 489 Winchburgh Women's Rural Institute, Winchburgh.
 H No. 486 Scott, Mrs T., Toll House, Pencaitland.
 C No. 485 Roberts, Miss J., Arborvitae Cottage, Ratho.

HORSE SHOEING

Open to Shoeing-Smiths from any part of Great Britain,
Northern Ireland, and Irish Free State.

CLASS 1. CART or LORRY HORSES (OPEN CLASS). 1st Prize, £5 and Gold Watch; 2nd Prize, £5 and Canteen of Cutlery; 3rd Prize, £5 and Gold Medal; 4th Prize, £4 and Gold Medal; 5th Prize, £3; 6th Prize, £2; 7th Prize, £2; 8th Prize, £1; 9th Prize, £1.

1st No. 74	Martin, Edward, jun., New Row, Closeburn, Thornhill.
2nd No. 85	Hamilton, John J., Twynholm, Kirkcudbrightshire.
3rd No. 39	Duncan, James, Newburgh, Aberdeen.
4th No. 72	Stephen, William, Balmellie Street Shoeing Forge, Turriff.
5th No. 70	Young, James, Parkview, East Kilbride.
6th No. 63	Fitzpatrick, Christopher, 206 Clarkston Road, Cathcart.
7th No. 66	Borthwick, Richard, Mossend Smithy, Gorebridge.
8th No. 51	Jeffrey, Alexander, jun., Niddrie Mill, Portobello.
9th No. 83	Kinnear, Henry, Dechmont, Uphall.

CLASS 2. CART or LORRY HORSES (Juniors under twenty-five years of age).—1st Prize, £5 and Clock; 2nd Prize, £3 and Canteen of Cutlery; 3rd Prize, £2 and Gold Medal; 4th Prize, £1.

1st No. 14	Thain, Archibald, Green of Udney, Udney.
2nd No. 4	Borthwick, Richard, Mossend Smithy, Gorebridge.
3rd No. 5	Donald, Innes, 13 Village, Monymusk.
4th No. 13	Grant, James, Glentanar, Aboyne.

LIVE STOCK JUDGING COMPETITION

INDIVIDUAL COMPETITION.

PREMIUMS, £5, £4, £3, £2, and £1.

1st	Dunlop, George, Midland, Prestwick (42 points).
2nd	{ Mennie, Alexander D., Burnside of Lethenty, Fyvie (40 points).
3rd equal	{ Phizacklea, A. A., Dairy School, Kilmarnock (40 points).
4th	{ M'Ainsh, A. P., Kennacoil, Dunkeld (40 points).
5th	Whyte, Archibald, Bleaton, Blairgowrie (38 points).

TEAM COMPETITION.

1st Prize, £10, and 5 Medium Silver Medals.

WEST OF SCOTLAND AGRICULTURAL COLLEGE, "A" TEAM.

Dunlop, George, Midland, Prestwick	42 points
Alexander, W. R., Dairy School, Kilmarnock	34 "
Wardrop, Robert L., jun., West Pokelly, Stewarton	32 "
M'Naughton, J. Gordon, Devon Lodge, Helensburgh	28 "
Thomson, William D., Townhead Manse, Dumfries	22 "
	158 "

2nd Prize, £5, and 5 Medium Bronze Medals.

ABERDEEN AND NORTH OF SCOTLAND COLLEGE OF AGRICULTURE.

Bruce, Miss Mary C., Inschfield, Insch, Aberdeen	34 points
Dawson, Allan A., Bridge of Marnock, Huntly	28 "
Watson, T. Y., Balcairn, Old Meldrum	28 "
Green, A. G., Collyhill, Inverurie	26 "
Stuart, Ian, Bucklerburn, Coulter	20 "
	136 "

NEW IMPLEMENTS

The Judges, having inspected the new implements submitted for competition, have awarded the Society's Silver Medal to the following :—

Morton Engineering Co., Ladylands, Corstorphine (No. 1332)—An improved Plough Share.

Sherriff, Thomas, & Co., West Barns, Dunbar, East Lothian (No. 1568)—A new combined Sower, Hoer, and Cultivator.

M'Bain Brothers, Limited, Berwick-on-Tweed (No. 300) — A Windmill Governor.

COTTAGE RANGES AND GRATES

CLASS 1. COOKING RANGE or COOKER suitable for a rural cottage occupied by a farm worker or any one employed in a country occupation; the width of fireplace to be not less than 36" or more than 48".

First Prize—£12 and Society's Large Silver Medal.

Second Prize—£8 and Society's Large Bronze Medal.

1st No. 3 Jones & Campbell, Limited, Torwood Foundry, Larbert—No. 1920A "Chevalier" Building-in Range, 42" wide by 48" high by 26" high fronts, 16" deep hobs, for HP boiler, back coves and end skirtings.

2nd No. 5 Jones & Campbell, Limited, Torwood Foundry, Larbert—"Bungalow Belle" Self-setting Range, 36", oven and high-pressure boiler

CLASS 2. GRATE suitable for sitting-room or bedroom in a similar house; fireplace not less than 24"×30" or more than 36"×36".

First Prize—£7 and Society's Medium Silver Medal.

Second Prize—£3 and Society's Medium Bronze Medal.

1st No. 20 Jones & Campbell, Limited, Torwood Foundry, Larbert—No. 951 Mantel Register, 30" by 45", with barless fire.

2nd No. 18 Carron Company, Carron Works, Carron, Falkirk—Mantel Register Grate, 30" by 36", small brick in iron back, Carronette low fire, painted. Pattern No. 1093.

JUDGES.

Shorthorn.—Murray Conacher, The Royal Farms, Windsor.

Aberdeen-Angus.—James Whyte, Hayston, Glamis.

Galloway.—Walter Biggar, Grange Farm, Dalbeattie.

Belted Galloway.—George Clark, Askerton Farm, Brampton, Cumberland.

Highland.—Alexander MacDonald, Estates Office, Aberfeldy.

Ayrshire.—Adam W. Montgomerie, Lessnessock, Ochiltree.

British Friesian.—Albert Weightman, Middle Herrington Farm, Sunderland.

Red Poll.—J. P. Milne, Garden Farm, Burgh Heath, Tadworth, Surrey.

Dexter.—Sam Woodiwiss, Graveleys, Great Waltham, Chelmsford.

Fat Cattle.—William Orr, 130 George Street, Edinburgh.

Draught Stallions and Colts.—George A. Marshall, Mansefield, Kirkcudbright.

Draught Mares and Fillies.—William Robertson, Park of Keir, Dunblane.

Hunters and Riding Ponies.—Lieut.-Colonel John M'Kie, Glencaird, Bargrennan, Newton-Stewart.

Highland Ponies.—Alexander MacDonald, Estates Office, Aberfeldy.

Western Island Ponies.—R. W. R. Mackenzie, Carpow House, Newburgh, Fife.

Shetland Ponies.—David Dow, Rossie, Auchtermuchty.

Harness Classes.—Alexander Morton, Gowanbank, Darvel.

Blackface Sheep.—William M. Clark, Crossflatt, Muirkirk.

Cheviot.—James Shiell, Sourhope, Yetholm, Kelso.

Border Leicester.—James Findlay, North Hill of Craigo, Laurencekirk.

Half-Bred.—William Smith, New Haggerston, Beal, Northumberland.

Oxford Down.—J. H. Murray, Hulam, Castle Eden, Durham.

Suffolk.—D. Abbott Green, East Donypand Hall, Colchester.

Shropshire.—R. Everall, Ensdon House, Montford Bridge, Salop.

Dorset Horn.—E. G. Heal, Newclose, Thorley, Isle of Wight.

Fat Sheep.—W. K. Jackson, Broomlands, Symington, Lanarkshire.

Goats.—Sam Woodiwiss, Graveleys, Great Waltham, Chelmsford.

Large White Pigs.—Colonel F. A. Walker Jones, Slackhead, Milnthorpe.

Middle White.—F. Farquharson, Holywell Farm, Watford, Herts.

Large Black.—John H. Glover, Cornwood, South Devon.

Cumberland.—William Bainbridge, Woodside Farm, Temple Sowerby, Penrith.

Large White Ulster.—H. Dales, Ministry of Agriculture, Wellington Place, Belfast.

Poultry.—James Weir, Brickhouse, New Abbey Road, Dumfries, *Classes* 1 to 22, 61 to 72, 89 to 96; William Stewart, Home Farm, Fyvie Castle, Fyvie, *Classes* 23 to 60; George Faulkner, Rowton, Choster, *Classes* 73 to 88; J. H. Gilbert, The Royal Aviaries, Windsor, *Classes* 97 to 119.

Rabbits.—H. Tarbox, 20 Little Church Street, Rugby.

Honey, &c.—Joseph Tinsley, West of Scotland College of Agriculture, Burns Avenue, Kilmarnock.

Dairy Produce.—Robert Mossman (J. Mossman & Sons), 65 Grassmarket, Edinburgh.

Wool.—George Stewart (Stewart Brothers), 135 Constitution Street, Leith.

Rural Industries.—Miss Bruce, 111A George Street, Edinburgh, *Classes* 1, 2, 3, 4, 5, 6, 15, 16, 21; Mr J. Mountford, of Messrs Robert Maule & Son, Edinburgh, *Classes* 7, 19, 20, 26, 27; Miss M. Symonds, 399, 401 Oxford Street London, W.1, *Classes* 8, 9, 14, 22, 24, 25; Miss Chart, Edinburgh College of Art, Edinburgh, *Classes* 10, 11, 13, 17, 18, 23; Mrs C. Macrae, Galloway Rabbitries, Longcastle, Whauphill, *Class* 12.

Horse - Shoeing.—Arthur Gofton, F.R.C.V.S., City of Edinburgh Veterinary Department, Johnston Terrace, William Paul, Baillie's Causeway, Hamilton; William Mackie, Tifty, Fyvie.

Cottage Ranges and Grates.—Richard Baillie, Builder and Contractor, Pencaitland; Mrs C. Blair, Hoprig Mains, Gladsmuir; Thomas Strachan (Keir & Cawder Ltd.), Keir Estates, Dunblane.

ATTENDING MEMBERS.

SHORTHORN.—*Harry Armour, Robert Miller, William Allison, Andrew P. B. Kerr.*

ABERDEEN-ANGUS.—*James Durno, George G. Mercer, General R. Gordou Gilmour, C.V.O., C.B., D.S.O., John T. M'Laren, Jun.*

GALLOWAY.—*James M'Queen, John Kerr, Professor Ernest Shearer.*

HELTED GALLOWAY.—*Alexander Robertson, Ian C. Menzies, Robert Ramsay.*

HIGHLAND.—*Sir Hugh Shaw Stewart, Bart, C.B., James Cadzow.*

AYRSHIRE.—*William Low, James M'Clean, John M. M'Kean, William Robertson, Bailie Thomas B. Whitson.*

BRITISH FRIESIAN.—*Thomas Elder, Colonel W. Wingate Gray, William Robertson Milne, William M. Wilson.*

RED POLL.—*William Hunter, Bailie W. J. Thomson.*

DEXTER.—*Sir David Wilson, Bart., James Shields.*

DRAUGHT STALLIONS AND COLTS.—*A. P. Gordon, John Stewart, Howard Usher Cunningham, Mark C. Morrison, Robin Welsh.*

DRAUGHT MARES AND FILLIES.—*Lieut.-Col. W. T. R. Houldsworth, A. A. Hagart Speirs, James Allison, William Logan, John Robertson.*

HUNTERS AND RIDING PONIES.—*Major R. W. Sharpe, Brig.-General Stirling, John G. Dudgeon, Gideon Fairley, Robert Balfour Kerr.*

HIGHLAND PONIES.—*Thomas Elliot, John E. B. Cowper, Andrew Renwick.*

WESTERN ISLAND PONIES.—*James Gray, John D. S. Baillie, G. A. Connor.*

SHEPHERD PONIES.—*Sir James I. Davidson, Charles H. Beveridge, J. C. Rose.*

HARNESS CLASSES.—*Athole S. Hay, W. A. Baird, George W. Blackwood.*

BLACKFACE SHEEP.—*Alexander Munro, Principal O. Charnock Bradley, Matthew Mather.*

CHEVIOT.—*Hon. T. G. P. Corbett, Phipps O. Turnbull, Ralph K. Dalziel, John Robert Dale.*

BORDER LEICESTER.—*John Elliot, James Elder, W. W. Anderson, Hugh Miller.*

HALF-BRED.—*J. T. M'Laren, David Sibbald.*

OXFORD DOWN.—*Alexander Niven, James C. Jeffrey, A. G. Spence.*

SUFFOLK.—*George Will, Bailie John Hay.*

SHROPSHIRE.—*G. B. Shields, Bailie William Poole.*

DORSET HORN.—*G. B. Shields, Bailie David W. Deas.*

GOATS.—*Dr T. G. Nasmyth, Miss Bremner, James M'Gillivray, Councillor John Stark, O.B.E., D.L.*

LARGE WHITE PIGS.—*Sir Henry Dundas, Bart., William Bruce, M.A., B.Sc., James Cook.*

MIDDLE WHITE.—*A. H. Reid, Charles Buchanan.*

LARGE BLACK.—*A. Thornton Hunter, John Clark, George Sinclair.*

CUMBERLAND.—*Peter Grant, A. J. M'Laren.*

LARGE WHITE ULSTER.—*Dr R. S. MacDougall, David Allison, John Milne Henderson.*

POULTRY.—*Dr J. F. Tocher, Robert J. M. Brockley, Alexander Mitchell, Frederick Porter, Mark Slight.*

RABBITS.—*The Earl of Elgin and Kincardine, C.M.G., Miss E. L. Laidlaw, James Lawrie, Miss Macmillan, Judge Robert A. Speirs.*

HONEY.—*The Earl of Haddington, A. Aikman Blair, Thomas Blair (Hoprig).*

DAIRY PRODUCE.—*Thomas Howie, Bailie Adam M. Millar.*

WOOL.—*Convener William Duncan, George Stewart.*

RURAL INDUSTRIES.—*Sir A. Buchan-Hepburn, Bart., Bailie Peter H. Allan, Andrew Bowie, Councillor Angus M. Gregorson, Bailie Thomas T. M'Crow, James Pendreigh.*

HORSE-SHOING.—*Sir Henry Dundas, Bart., George G. Mercer, Robert Miller, Thomas Blair (Currie), J. Letham, G. M'Donald.*

COTTAGE RANGES AND GRATES.—*Judge Robert Bathgate.*

VETERINARY DEPARTMENT.

CLASS EXAMINATIONS, 1927.

Silver Medals were awarded to the following :—

GLASGOW VETERINARY COLLEGE.

Junior Anatomy	Iain A. Gillespie, Bruichladdich.
Chemistry	Thomas W. Stobo, Lesmahagow.
Biology	Iain A. Gillespie, Bruichladdich.
Senior Anatomy	George Slavin, Springburn.
Physiology	George Slavin, Springburn.
Zootechny	Marion Stewart, Scotstounhill.
Materia Medica	John M. M'Donald, Glasgow.
Pathology	Neil M'Arthur, Campbeltown.
Hygiene	John M. M'Donald, Glasgow.
Surgery	Thomas Johnston, Glasgow.
Medicine	Thomas Johnston, Glasgow.

11 Large Silver Medals, £10, 3s. 6d.

ROYAL (DICK) VETERINARY COLLEGE.

Junior Anatomy	G. N. Sutherland, Portsoy.
Chemistry	A. E. Stevenson, Edinburgh.
Biology	W. G. Robinson, Carlisle.
Senior Anatomy	A. P. Steele, Ipswich.
Physiology	A. P. Steele, Ipswich.
Zootechny	W. S. Davidson, Newcastle.
Materia Medica	W. P. Blount, Derby.
Pathology	R. W. Paley, Walsall.
Hygiene	W. P. Blount, Derby.
Surgery	J. M. Cummine, Turriff.
Medicine	G. Johnston, Gulberwick, Shetland.

11 Large Silver Medals, £10, 3s. 6d.

DISTRICT COMPETITIONS, 1927.

22 Districts—15 Grants of £12 each ; 1 of £11, 15s. ; 1 of £11, 10s. ; 3 of £11 ; 1 of £10, 10s. ; and 1 of £10 (Section I.)	£256 15 0
9 " Grants of £15 each	135 0 0
25 " Special Grants : Medals, £12, 1s. 6d.	151 0 6
Medals for Shows (37 large)	34 4 6
Medals for Cottages, Gardens, &c. (1 Medal)	0 7 9
40 " Medals for Hoeing Competitions, 1926-27	15 10 0
216 " Medals for Ploughing, 1926-27	108 0 0
Long Service Certificates, £38, 12s. 1d. ; Gold Medals, £49, 17s. 6d. ; and Silver Medals, £53, 18s. 6d. (1926-27)	142 8 1
	£843 5 10

ABSTRACT OF PREMIUMS.

District Competitions	£700 17 9
Long Service Awards	142 8 1
Veterinary Colleges (22 Medals)	20 7 0
	£863 12 10

KELSO SHOW, 1926.

ALTERATIONS IN PRIZE LIST.

On account of animals failing to comply with the Regulations as to calving, foaling and farrowing, the following changes have taken place in the list of animals for which prizes were awarded :—

CATTLE

SHORTHORN.

CLASS 7. COW or HEIFER, born on or after 1st December 1923.—
Premiums, £10, £5, £3, and £2.

- | | | |
|-----|--------|---|
| 1st | No. 61 | Strickland, J. M., Bainesse, Catterick, Yorkshire, Heifer, " Bainesse Mysie 6th " (68,071). |
| 2nd | No. 56 | Crawford and Balcarros, The Earl of, K.T., Balcarros House, Colinsburgh, Fife, Heifer, " Balcarros Judith " (47,369). |
| 3rd | No. 58 | Lovat, General The Lord, K.T., Beaufort Castle, Beaully, Heifer, " Beaufort Lady Laura " (64,180). |
| * | No. 59 | Malcolm, William M., Softlaw, Kelso, Heifer, " Rosewood 103rd " (65,514). |
| 4th | No. 60 | Snadden, W. M'Nair, of Coldoch, Blair Drummond, Stirling, Cow, " Lutwyche Nonpareil Beres 5th " (59,823). |

ABERDEEN-ANGUS.

CLASS 15. COW or HEIFER, born on or after 1st December 1923.—
Premiums, £10, £5, £3, and £2.

- | | | |
|-----|---------|--|
| * | No. 128 | Brassey, Sir Leonard, Bart., M.P., Apethorpe, Peterborough, Heifer, " Marquette " (75,890). |
| 1st | No. 130 | Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr, Heifer, " Elmina of Doonholm " (76,615). |
| 2nd | No. 132 | Kerr, J. E., of Harviestoun, Dollar, Heifer, " Evelett of Harviestoun " (76,631). |
| 3rd | No. 131 | Kennedy, Lt.-Col. Norman, D.S.O., of Doonholm, Ayr, Heifer, " Medusa of Doonholm " (76,620). |
| 4th | No. 135 | Wilson, Walter, Inchgower, Buckie, Heifer, " Pride of Morven " (77,780). |

The animals failing to qualify are marked thus ().*

BRITISH FRIESIAN.

CLASS 47. HEIFER, born in 1924.—Premiums, £10, £5, and £3.

- 1st No. 367 Weightman, A., Middle Herrington Farm, Sunderland, "Beverley Warrior's Jem" (78,928).
 * No. 361 Eaton, George T., Thurston Hall, Framfield, Uckfield, Sussex, "Thurston Karel Anemone 2nd" (87,964).
 2nd No. 363 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Hatsumer 2nd" (P.I.) (81,178).
 3rd No. 365 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Ischia 2nd" (81,180).

RED POLL.

CLASS 54. HEIFER, born in 1924.—Premiums, £10, £5, and £3.

- * No. 404 H.M. The King, Sandringham, King's Lynn, "Royal Primrose" (34,679).
 * No. 407 Brook, Lieut.-Colonel Charles, of Kinmount, Annan, "Kinmount Roseleaf" (34,242).
 1st No. 409 Loggat, Hugh, Arthurlie Park, Barrhead, Renfrewshire, "Arthurlie Crocus" (33,462).
 * No. 408 Burgh, Lord, Glenkindie House, Glenkindie, Aberdeenshire, "Stanway Aster" (34,845).

HORSES.

CLASS 68. YELD MARE, born before 1923.—Premiums, £15, £9, £6, and £4.

- * No. 509 Templeton, T. & M., Sandyknowe, Kelso, "Monk Gladys."
 1st No. 506 Paterson, Robert, Stamperland, Cathcart, "Craigie Ella."
 2nd No. 507 Reith, Miss E. M., Kennerty Farm, Peterculter, "Romance."
 3rd No. 504 Dodds, William, Clarilaw, St Boswells, "Eleanor."
 4th No. 505 Johnstone, John, Millantae, Lockerbie, "Rambler Rose."

PIGS.

MIDDLE WHITE.

CLASS 150. SOW, born in 1925.—Premiums, £8, £4, and £2.

- 1st No. 1379 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Dalmeny May Bird."
 " No. 1373 Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Bourne Beatrice 190th" (145,346).
 2nd No. 1372 Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Bourne Champion Queen 61st" (145,386).
 3rd No. 1377 Morgan, J. Pierpont, Wall Hall, Watford, "Aldenharn Baby Queen."

The animals failing to qualify are marked thus ().*

STATE OF THE FUNDS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

As at 30th NOVEMBER 1927

I. BRITISH GOVERNMENT SECURITIES—			
£19,800 5 per cent War Stock, 1929-47, at 101½	.	£19,517	2 6
£1,679, 18s. 4d. 2½ per cent Consolidated Stock, at 55	.	923	16 0
£8,000 4½ per cent Conversion Loan, at 96 x.d.	.	7,680	0 0
£6,200 3 per cent Local Loans, at 63½	.	3,929	5 0
£4,000 3½ per cent Conversion Loan, at 75	.	3,000	0 0
		<u>£35,050</u>	3 6
II. HERITABLE BONDS—			
£16,850 at 4½ per cent	.	16,850	0 0
III. RAILWAY DEBENTURE AND PREFERENCE STOCKS—			
£17,050 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59½	£10,102	2 6	
£11,554 Do. do. 4 per cent do., at 79½	9,156	10 11	
£16,105 London Midland and Scottish Railway Co. 4 per cent Debenture Stock, at 80½	13,004	15 8	
£1,500 Do. do. 4 per cent Preference Stock, at 73½	1,102	10 0	
£708 Southern Railway Co. 4 per cent Debenture Stock, at 81	569	8 7	
£450 Do. do. 5 per cent Preference Stock, at 89	400	10 0	
£112 Do. do. 5 per cent Guaranteed Stock, at 98	109	15 3	
		<u>34,445</u>	12 11
IV. BANK STOCKS—			
£5,000 0 0 Royal Bank of Scotland, at 338	£16,000	0 0	
£2,218 16 5 Bank of England, at 256½	5,696	16 5	
£1,110 18 4 Bank of Scotland, at 333	3,698	10 5	
£2,850 0 0 "B" Shares, Barclays Bank, at 56s. 3d.	8,015	12 6	
		<u>34,310</u>	19 4
V. COLONIAL GOVERNMENT STOCKS—			
£2,500 Dominion of Canada Registered 3½ per cent Stock (1930-50), at 82½	£2,068	15 0	
£2,500 New South Wales Inscribed 5 per cent Stock (1935-55), at 98½	2,462	10 0	
£2,500 Natal Inscribed 3½ per cent Stock (1914-39), at 87½	2,187	10 0	
£2,000 Western Australia Inscribed 4 per cent Stock (1942-62), at 83½	1,670	0 0	
£2,000 New Zealand Government 5 per cent Inscribed Stock (1946), at 103½	2,070	0 0	
£1,120 Victorian Government 3½ per cent Inscribed Stock, at 77½	868	0 0	
		<u>11,826</u>	15 0
Carry forward	.	£181,483	10 9

	Brought forward	£131 433 10 9
VI. ANNUITY STOCK—		
£32 Edinburgh and Leith Corporation Gas Commissioners, at 19½		632 0 0
VII. ESTIMATED VALUE of Buildings, No. 3 George IV. Bridge	£3,100 0 0	
VIII. ESTIMATED VALUE of Furniture, Paintings, Books, &c.	1,000 0 0	
		4,100 0 0
IX. ARREARS OF SUBSCRIPTIONS considered recoverable		377 10 6
X. BALANCES at 30th November 1927		2,428 3 4
	AMOUNT OF GENERAL FUNDS	£139,021 4 7
XI. SPECIAL FUNDS—		
TWEEDDALE GOLD MEDAL FUND—		
Heritable Bond, at 4½ per cent		£500 0 0
£100 3 per cent Local Loans Stock, at 63½		63 7 6
Sum on Deposit Receipt with British Linen Bank		18 9 6
		£581 17 0
FIFE AND KINROSS PERPETUAL GOLD CHALLENGE CUP FUND—		
£268 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59½	£158 15 10	
£201 Do. do. 4 per cent First Guaranteed Stock, at 75	150 15 0	
Sum on Deposit Receipt with British Linen Bank	36 16 11	
		346 7 9
PAISLEY PERPETUAL GOLD CHALLENGE CUP FUND—		
£802 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59½	£473 3 8	
Sum on Deposit Receipt with British Linen Bank	79 19 10	
		553 3 6
RENFREWSHIRE PERPETUAL GOLD CHALLENGE CUP FUND—		
£868 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59½	£395 15 10	
Sum on Deposit Receipt with British Linen Bank	73 16 8	
		469 12 6
WILLIAM TAYLOR MEMORIAL PRIZE FUND—		
£401 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59½	£237 11 10	
Sum on Deposit Receipt with British Linen Bank	61 10 3	
		299 2 1
WILLIAM DUTHIE PERPETUAL CHALLENGE CUP FUND—		
£260 2½ per cent Consolidated Stock, at 55		143 0 0
BALANCES WITH BRITISH LINEN BANK at 30th November 1927		55 17 10
	AMOUNT OF SPECIAL FUNDS	£2,449 0 8

DAVID WILSON, *Treasurer.*
 JAMES M'LAREN, *Chairman.*
 WM HOME COOK, C.A., *Auditor.*

EDINBURGH, 4th January 1928.

ABSTRACT of the ACCOUNTS of the HIGHLAND and CHARGE.

1. BALANCES as at 30th November 1926	.	.	.	.	£954 16 11	
2. ARREARS of Subscriptions outstanding at 30th November 1926	.	.	.	.	£333 5 6	
Whereof due by Members who have compounded for life, and whose arrears are thereby extinguished	.	.	.	.	£9 17 0	
Sums ordered to be written off					144 15 6	
						154 12 6
						178 13 0
3. INTERESTS AND DIVIDENDS—						
(1) Interests—						
On Heritable Bonds, less Income-tax	.	.	.	.	£652 13 0	
On Railway Debenture and Preference Stocks, do.	.	.	.	.	1,387 5 2	
On Colonial Government Stocks, do.	.	.	.	.	335 7 4	
On Annuity Stock, do.	.	.	.	.	25 12 0	
On Edinburgh Corporation Loans, do.	.	.	.	.	89 3 7	
On British Government Stocks, do.	.	.	.	.	1,435 7 10	
					£3,925 8 11	
(2) Dividends on Bank Stocks, less Income-tax	.	.	.	.	1,314 7 6	
						5,239 16 5
4. SUBSCRIPTIONS—						
Annual Subscriptions	.	.	.	.	£2,727 4 6	
Life Subscriptions	.	.	.	.	934 10 0	
						3,661 14 6
5. 'TRANSACTIONS'	.	.	.	.	.	19 4 0
6. INCOME-TAX repaid for year to 5th April 1927	.	.	.	.	.	1,069 9 4
7. RECEIPTS from Kelso Show, 1926	.	.	.	.	.	87 15 3
8. RECEIPTS from Edinburgh Show, 1927.	.	.	.	.	.	20,426 18 6
9. HERITABLE LOAN repaid	.	.	.	.	.	1,650 0 0
10. TEMPORARY LOANS uplifted	.	.	.	.	.	5,000 0 0
SUM OF CHARGE	.	.	.	.	.	£38,288 7 11

EDINBURGH, 4th January 1928.

AGRICULTURAL SOCIETY of SCOTLAND for Year 1926-1927.

DISCHARGE.

1. ESTABLISHMENT EXPENSES—		
Salaries and Wages—Secretary, £1250; Chief Clerk, £375; other Clerks, £492; Typist, £150; Messenger's Wages, £170; Cleaning, £52; Retiring Allowance to Mrs Simpson, £30; Allowance to Mrs Cowie and Family, £200		£2,710 0 0
Fen-duty, £22, 8s. ; Rates and Taxes, £85, 2s.		107 10 0
Coal, Gas, and Electric Light		79 17 9
Insurances, £45, 1s. 4d.; Special Annuity Premium, £51, 3s. 9d.; Telephone and Telegrams, £30, 19s. 11d.; Repairs and Furnishings, £41, 9s. 6d.		168 14 6
		<u>£3,075 2 3</u>
2. FEE to Auditor of Accounts for 1925-1926		75 0 0
3. EDUCATION—		
N.D.A. Examination		84 13 10
4. CHEMICAL DEPARTMENT—		
Fee to Chemist	£100 0 0	
Analyses for Members and Expenses	349 1 4	
		<u>449 1 4</u>
5. VETERINARY DEPARTMENT—		
Medals to Students		20 7 0
6. DAIRY DEPARTMENT—		
Expenses of Examination held at Kilmarnock	£308 15 1	
Less Entry Fees.	116 11 0	
		<u>192 4 1</u>
7. SOCIETY'S 'TRANSACTIONS'		2,009 1 0
8. ORDINARY Printing, £176, 9s. 4d.; Advertising, £45, 13s. 6d.; Stationery, Books, &c., £120, 3s. 4d.; Postages, &c., £130; Bank and Post Office Charges, £10, 2s. 8d.		482 8 5
9. SALARY to Consulting Engineer		150 0 0
10. GRANT to Public Society		5 0 0
11. MISCELLANEOUS Payments		191 4 0
12. INVESTMENTS made		5,042 1 3
13. SUMS lodged on Temporary Loan		3,000 0 0
14. EXPENSES in connection with Kelso Show, 1926		191 5 0
15. EXPENSES in connection with Edinburgh Show, 1927—		
Premiums, £3765, 15s.; Medals, £40, 16s.; Expenses of Show, £14,335, 6s. 5d. (as per page 389)		18,141 17 5
16. PREMIUMS and Medals for Local Shows and District Competitions		607 10 6
17. CERTIFICATES and Medals for Long Service		160 13 1
18. EXPENSES in connection with visiting sites for future Shows and attending Meetings		66 11 5
19. SPECIAL GRANTS		1,400 0 0
20. ARREARS removed from Subscription List at 30th November 1927		138 8 6
21. ARREARS of Subscriptions outstanding at 30th November 1927		377 10 6
22. BALANCES at 30th November 1927—		
On Account Current with Royal Bank of Scotland—		
Edinburgh Account	£2,167 10 11	
London Account	258 15 0	
	<u>£2,426 5 11</u>	
In hands of Secretary	1 17 5	
		<u>2,428 3 4</u>
SUM OF DISCHARGE		<u>£38,288 7 11</u>

DAVID WILSON, *Treasurer.*
 JAMES M'LAREN, *Chairman.*
 WM. HOME COOK, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS

CHARGE.

1. AMOUNT COLLECTED DURING SHOW—

Gates	£9,229 4 2
Grand Stand	1,935 1 0
Catalogues and Awards	856 8 10
Tickets sold	36 0 0
Rent of Motor Garage and Chauffeurs' Tickets	172 14 6
Cloak-Rooms and Lavatories	75 13 11
	£12,305 2 5

2. FORAGE SOLD	10 5 10
3. ENTRY FEES AND STAND RENTS	6,680 8 0
4. RENT OF REFRESHMENT BOOTHS	620 0 0
5. ADVERTISEMENTS IN CATALOGUE AND PREMIUM LIST	309 11 6
6. SUBSCRIPTIONS IN AID OF PREMIUMS	480 10 0
7. INTEREST ON TEMPORARY LOANS	20 15 9
8. MISCELLANEOUS	0 5 0

£20,426 18 6

<i>Note.</i> —From the balance of	£2298 6 1
Deduct Premiums undrawn at 30th November	258 15 0
	£2039 11 1
To the above balance there falls to be added sums due by Exhibitors for fitting up of stands, amounting to	50 16 0
Probable surplus	£2090 7 1

EDINBURGH, 4th January 1928.

of the EDINBURGH SHOW, 1927.

DISCHARGE.

1. SHOWYARD—			
Fitting up of Showyard	£4,247	0	0
Bell & Sime, Ltd.—Hire of Timber	3,392	6	2
Rosettes	£42	0	0
Penning Poultry and Rabbits	47	18	4
Horse-Shoeing	16	13	9
Inspection of Grand Stand	3	3	0
Railway Carriage and Cartage	48	12	4
		158	7 5
Salary to John Reid, Showyard Erector		500	0 0
Edinburgh Corporation—Cost of Site		500	0 0
2. FORAGE and Bedding for Stock		389	11 5
3. POLICE		176	10 0
4. FIRE BRIGADE		9	4 0
5. TRAVELLING EXPENSES of Judges, Stewards, and Staff		267	13 10
6. HOTELS AND LUNCHEONS—			
Hotels for 27 Directors, 8 Stewards, and 23 Judges	£205	5	3
Luncheons in Showyard for Directors, Judges, Attending Members, Members of Committee, Pressmen, and Staff, including Dinner to South African Farmers, &c.	620	12	7
		825	17 10
7. ASSISTANTS and Attendants		570	5 3
8. MUSIC		135	0 0
9. PRINTING, Members' Badges, and Stationery		1,636	5 1
10. ADVERTISING and Bill-posting		1,091	9 10
11. GRANTS to Mrs Traill, £5; Forestry Exhibition, £40		45	0 0
12. VETERINARY INSPECTION		10	10 0
13. CONCERT and Church Service for Attendants		4	17 4
14. SHOW TREASURER		50	0 0
15. POSTAGES		140	0 0
16. POST OFFICE and Telephones		81	14 7
17. AMBULANCE		10	10 0
18. MISCELLANEOUS		93	3 8
		£14,335	6 5
19. PREMIUMS drawn at 30th November 1927		3,793	6 0
		£18,128	12 5
CREDIT BALANCE		2,298	6 1
		£20,426	18 6

DAVID WILSON, *Treasurer.*JAMES M'LAREN, *Chairman.*WM. HOME COOK, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS of the CHARGE.

I. FUNDS as at 30th November 1926—

Amount on Heritable Loan at $4\frac{1}{2}$ per cent	£3,500 0 0
£3,193 London and North-Eastern Railway Company 3 per cent Debenture Stock, purchased at	2,650 0 0
£926, 16s. 3d. $3\frac{1}{2}$ per cent Conversion Loan, purchased at	709 19 4
£500 Queensland $3\frac{1}{2}$ per cent Inscribed Stock, 1950-70, pur- chased at	450 1 0
£412 London Midland and Scottish Railway Company 4 per cent Debenture Stock, purchased at	611 10 6
£190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock, purchased at	259 1 11
	£8,180 12 9
BALANCE on Account Current with Royal Bank of Scotland	194 1 10
	£8,374 14 7

II. INVESTMENT REALISED—

1927. Nov. 11. Heritable Loan repaid	£3,500 0 0
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III. INTEREST ON INVESTMENTS—

On £3500 on Heritable Loan at $4\frac{1}{2}$ per cent, for year to Martinmas 1927	£166 5 0
Less tax	33 5 0
	£133 0 0
On £3193 London and North-Eastern Railway Company 3 per cent Debenture Stock, for year to 30th June 1927	£95 15 10
Less tax	19 3 2
	76 12 8
On £926, 16s. 3d., Conversion Loan, for year to 1st October 1927	£32 8 8
Less tax	6 9 8
	25 19 0
On £500 Queensland $3\frac{1}{2}$ per cent Inscribed Stock, 1950-70, for year to 30th June 1927	17 10 0
On £412 London Midland and Scottish Rail- way Company 4 per cent Debenture Stock, for year to 30th June 1927	£16 9 6
Less tax	3 6 0
	13 3 6
On £190 London Midland and Scottish Rail- way Company 4 per cent Guaranteed Stock, for year to 30th June 1927	£7 12 0
Less tax	1 10 4
	6 1 8
	272 6 10

IV. INCOME-TAX repaid for year to 5th April 1927	63 14 2
SUM OF CHARGE	£8,710 15 7

ARGYLL NAVAL FUND for the Year 1926-1927.

DISCHARGE.

I. ALLOWANCES to the eight following Recipients—

R. A. Forbes (eighth year)	.	.	.	.	.	£40	0	0
J. H. Forbes (sixth year)	.	.	.	.	.	40	0	0
J. H. Dundas (fifth year)	.	.	.	.	.	40	0	0
C. D. Bonham-Carter (fifth year)	.	.	.	.	.	40	0	0
W. J. R. Campbell (fourth year)	.	.	.	.	.	40	0	0
M. W. G. Webster (second year)	.	.	.	.	.	40	0	0
C. E. Keys (second year)	.	.	.	.	.	40	0	0
H. C. MacLean (first year)	.	.	.	.	.	20	0	0

 £300 0 0

II. INVESTMENT MADE—

£4,625 3½ per cent Conversion Loan . . . £3,506 18 10

III. ADVERTISING—

Henry Munro Ltd. 24 9 0

IV. FUNDS at 30th November 1927—

£5,551, 16s. 3d. 3½ per cent Conversion Loan,
purchased at £4,216 18 2

£3,193 London and North-Eastern Railway
Company 3 per cent Debenture Stock, pur-
chased at 2,650 0 0

£500 Queensland 3½ per cent Inscribed Stock,
1950-70, purchased at 450 1 0

£412 London Midland and Scottish Railway
Company 4 per cent Debenture Stock, pur-
chased at 611 10 6

£190 London Midland and Scottish Railway
Company 4 per cent Guaranteed Stock,
purchased at 259 1 11

 £8,187 11 7

Note.—The above Funds are entered at cost price. The value at 30th November 1927 was £8900, 1s. 6d.

Balance on Account Current with Royal Bank
of Scotland 198 15 0

 8,386 6 7

SUM OF DISCHARGE . . . £8,710 15 7

DAVID WILSON, *Treasurer.*
JAMES M'LAREN, *Chairman.*
WM. HOME COOK, C.A., *Auditor.*

VIEW OF RECEIPTS AND PAYMENTS

For the Year 1926-1927.

RECEIPTS.

1. ANNUAL SUBSCRIPTIONS AND ARREARS received	£2,389 18 6
2. LIFE SUBSCRIPTIONS	931 10 0
3. INTERESTS AND DIVIDENDS—	
Interests	£3,925 8 11
Dividends	1,314 7 6
	5,239 16 5
4. 'TRANSACTIONS'—"Advertisements"	19 4 0
5. INCOME-TAX repaid for year to 5th April 1927	1,069 9 4
6. RECEIPTS from Kelso Show, 1926	87 15 3
7. RECEIPTS from Edinburgh Show, 1927	20,426 18 6
	£30,167 12 0

PAYMENTS.

1. ESTABLISHMENT EXPENSES—	
Salaries and Wages and Allowance for Cleaning	£2,489 0 0
Retiring Allowances	230 0 0
Fen-duty, Taxes, Coal, Gas and Electric	
Light and Insurance	283 12 10
Telephone and Telegrams	30 19 11
Repairs and Furnishings	41 9 6
	£3,075 2 3
2. FEE TO AUDITOR of Accounts, 1925-1926	75 0 0
3. EDUCATION—N.D.A. Examination	84 13 10
4. CHEMICAL DEPARTMENT	449 1 4
5. VETERINARY DEPARTMENT	20 7 0
6. DAIRY DEPARTMENT	192 4 1
7. SOCIETY'S 'TRANSACTIONS'	2,009 1 0
8. ORDINARY Printing, Advertising, Stationery,	
Books, Postages	482 8 5
9. SALARY to Consulting Engineer	150 0 0
10. GRANT to Public Society	5 0 0
11. MISCELLANEOUS Payments	191 4 0
12. PAYMENTS on account of Kelso Show, 1926	191 5 0
13. PAYMENTS on account of Edinburgh Show, 1927—	
Premiums	£3,808 11 0
Expenses	14,335 6 5
	18,141 17 5
14. PREMIUMS AND MEDALS for Local Shows and District Competitions	607 10 6
15. CERTIFICATES AND MEDALS for Long Service	160 18 1
16. EXPENSES in connection with Visiting Sites for future Shows and attending Meetings	66 11 5
17. SPECIAL GRANTS	1,400 0 0
	27,302 4 4
BALANCE OF RECEIPTS	£2,865 7 8

DAVID WILSON, *Treasurer.*
 JAMES M'LAREN, *Chairman.*
 WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, 4th January 1928.

PROCEEDINGS AT BOARD MEETINGS.

MEETING OF DIRECTORS, 6TH APRIL 1927.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—Ordinary Directors—Mr Harry Armour; Mr Norman H. Constable; Mr James Durno; Mr Thomas Elder; Mr John Elliot; Mr William Elliot; Mr W. P. Gilmour; Mr Alexander P. Gordon; Mr William C. Hunter; Mr J. E. Kerr; Mr Robert Macmillan; Mr James M'Queen; Dr T. G. Nasmyth; Mr William S. Niven; Mr Alfred H. Reid; Major R. W. Sharpe; Mr A. A. Hagart Speirs; Brig.-Gen. Archibald Stirling; Mr Phipps O. Turnbull. *Extraordinary Directors*—Colonel F. J. Carruthers; Sir James I. Davidson; Colonel W. Wingate Gray; Lieut.-Colonel W. T. R. Houldsworth; Mr A. Thornton Hunter; Mr George G. Mercer; Mr Robert Miller; Mr Alexander Murdoch; Mr G. Bertram Shields; Mr John P. Sleigh; Major Mark Sprot; Mr John Stewart. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Consulting Engineer*—Professor R. Stanfield.

Letters.

The following letters were submitted:—

The Dowager Lady Buchanan-Jardine.—Thanks for Minute of sympathy on the death of her husband, the late Sir Robert W. Buchanan-Jardine, Bart.

Mr James M'Laren, Cornton.—Thanks, on behalf of himself and other relatives, for Minute of sympathy on the death of his brother, the late Mr Duncan M'Laren of Fairnington.

Scottish Savings Committee.—Thanks for free stand at Edinburgh Show.

International Institute of Agriculture.—Intimation of an International Conference of Wheat Experts at Rome on 25th April.

Commonwealth of Australia.—Intimation regarding a shipment of live-stock from Scotland to Australia. The Secretary reported that he had communicated the information received to about one hundred stock-breeders in Scotland.

World's Dairy Congress.

A letter was read from the Board of Agriculture for Scotland, with regard to the formation of a Scottish Sub-Committee to co-operate with the General Committee of the World's Dairy Congress to be held in 1928. A Meeting was to be held that afternoon at the offices of the Board, at which a representative of the Society was invited to attend. It was agreed to appoint Mr W. P. Gilmour, Balmangan, to represent the Society at the Meeting.

Edinburgh Show, 1927.

Attending Members.—The following Directors were appointed as attending members: *Shorthorn*—Harry Armour and Robert Miller; *Aberdeen-Angus*—James Durno and George G. Mercer; *Galloway*—James M'Queen; *Belted Galloway*—Alexander Robertson; *Highland*—Sir Hugh Shaw Stewart, Bart., C.B.;

Ayrshire—William Low and James M'Clean; *British Friesian*—Thomas Elder and Colonel W. Wingate Gray; *Red Poll*—William Hunter; *Dexter*—Sir David Wilson, Bart.; *Draught Stallions and Colts*—A. P. Gordon and John Stewart; *Draught Mares and Fillies*—Lieut.-Colonel W. T. R. Houldsworth and A. A. Hagart Speirs; *Hunters and Riding Ponies*—Major R. W. Sharpe and Brig.-General Archibald Stirling; *Highland Ponies*—Thomas Elliot; *Western Island Ponies*—James Gray; *Shetland Ponies*—Sir James I. Davidson; *Harness Classes*—Athole S. Hay; *Blackface Sheep*—Gilbert Davidson and Alexander Munro; *Cheviot*—Hon. T. G. P. Corbett and Phipps O. Turnbull; *Border Leicester*—John Elliot and James Elder; *Half-Bred*—J. T. M'Laren; *Oxford Down*—Alexander Niven; *Suffolk*—George Will; *Shropshire and Dorset Horn*—G. B. Shields; *Goats*—Dr T. G. Nasmyth; *Large White Pigs*—Sir Henry Dundas, Bart.; *Middle White*—A. H. Reid; *Large Black*—A. Thornton Hunter; *Cumberland*—Peter Grant; *Large White Ulster*—Dr R. S. MacDougall; *Poultry*—Dr J. F. Tocher; *Rabbits*—The Earl of Elgin and Kincardine, C.M.G.; *Honey*—The Earl of Haddington; *Wool*—Convener William Duncan; *Rural Industries*—Sir Archibald Buchan-Hepburn, Bart.

Local Committee.—The Secretary reported that, at a meeting of Local Directors, held at Edinburgh on 23rd March, additional members of the Local Committee of Management from the Show Division had been appointed.

Assistant Steward of Sheep.—On the motion of Mr ROBERT MACMILLAN, Mr N. H. Constable was unanimously appointed Assistant Steward of Sheep, in place of the late Mr Duncan M'Laren.

Live-Stock Judging Competition.—The following were appointed a Committee to make arrangements for, and to carry through, the Live-Stock Judging Competition: Mr N. H. Constable, Mr W. P. Gilmour, Mr J. E. Kerr, Mr James M'Laren, Mr Robert Macmillan, Mr Alexander Murdoch, Mr G. B. Shields, and Mr John P. Sleight, with the Chairman, Treasurer, and Honorary Secretary, *ex officio*.

Catering.—A Minute of Meeting of Catering Committee, dated 6th April, was submitted and approved.

The Minute recommended that the official Caterers be requested, on this occasion, to supply only home-fed meat at the Show. After this year the use of home-fed meat will be compulsory.

Exhibition of Meteorological Instruments.—A letter was read from the Board of Agriculture with regard to a suggestion that an exhibition of Meteorological Instruments suitable for farmers' use should be held in connection with the proposed demonstration by the Meteorological Office. On the Motion of Dr T. G. NASMYTH, it was agreed to request the Board to make arrangements for such an exhibition.

Minute of Shows Committee.—A Minute of Meeting of Shows Committee, dated 6th April, was submitted and approved.

The Minute dealt with the following matters:—

Highland Cattle.—A request from the Breed Society for an additional class for one-year old heifers was deferred for consideration at the November Meeting. With regard to parading females, it was recommended that this be made compulsory in the case of animals born in 1927 and later, when these animals come to be exhibited at future Shows.

Grates for Farm Cottages.—Following on a suggestion by His Grace the Duke of Buccleuch, it was recommended that a competition for Cottage Ranges and Grates be held at the Show. The proposal was that there be two classes, as follows:—

1. A cooking range or cooker, suitable for a rural cottage occupied by a farm worker, or any one employed in a country occupation, the width of fireplace to be not less than 3 feet or more than 4 feet.
2. A grate suitable for a sitting-room or bedroom in a similar house: fireplace to be not less than 24 inches by 30 inches, or more than 36 inches by 36 inches.

The Duke of Buccleuch desired to offer prize money for the competition, amounting to £30, and it was recommended that this be accepted with thanks.

It was further recommended that the following Sub-Committee be appointed to consider the details of the competition and report—Mr G. B. Shields, Convener, Mr J. H. Milne Home, Sir Hugh Shaw Stewart, Bart., and Professor R. Stanfield.

Visit of South African Farmers.—A letter had been considered from the National Farmers' Union of Scotland with regard to a visit of a party of South African farmers to this country during the period of the Show. The party proposed to visit the Show on Tuesday, 26th July, and it was suggested that the Society might care to extend hospitality to them. The Committee recommended that the party be given free admission and be received at the Showyard, and that

the Society entertain them to dinner on the Tuesday evening. In the event of the Corporation of Edinburgh desiring to entertain the visitors to dinner, the Society could stand aside in their favour. It was further recommended that the following special Committee be appointed to make all necessary arrangements and report—Mr G. B. Shields (*Convener*), The Earl of Elgin and Kincardine, Mr Alexander Murdoch, Dr T. G. Nasmyth, and Mr John Stewart, with the Chairman, Treasurer, and Honorary Secretary, *ex officio*.

Allotment Gardens.

A Minute of Meeting of Shows Committee, dated 6th April, was submitted and approved.

The Minute recommended that the Society extend encouragement to Allotment Gardens, under its scheme of local grants, and that, with this object in view, the National Union of Allotment Holders be asked to put forward a scheme for the award of medals or money, the cost not to exceed £15 for the current year.

Long Service Awards.

A Minute of Meeting of Shows Committee, dated 6th April, was submitted.

The Minute embodied the following recommendations by a special Sub-Committee: (1) That the Long Service Certificate and Medal continue to be awarded, as at present, for thirty years' approved service; (2) that a Gold Medal and Special Certificate be awarded to applicants with not less than fifty years' approved service.

Mr G. B. SHIELDS moved approval of the Minute, and this was seconded by Mr JAMES M'QUEEN.

Mr W. P. GILMOUR expressed disappointment with the Committee's recommendation, in respect that there was to be no recognition of a man who had served for twenty-five years, or of a man with forty years' service. He moved that the matter be remitted back to the Committee for further consideration, and this was seconded by Mr JOHN ELLIOT.

On a vote being taken, it was decided, by fifteen votes to ten, that the matter be remitted back to the Committee for reconsideration.

Research in Animal Breeding.

On the Motion of Sir DAVID WILSON of Carboth, Bart., it was unanimously agreed to confirm the recommendation adopted at last Meeting, that a Grant of £1000 be given towards the endowment of a Department of Research in Animal Breeding in the University of Edinburgh.

National Diploma in Agriculture.

Mr HARRY ARMOUR submitted the following Motion, of which notice was given at last Meeting, and a copy of which appeared on the Agenda:—

"That it be remitted to the Education Committee to consider and report:—

"(a) Whether it is necessary or desirable to examine Candidates for the N.D.A. who hold a University Degree or a College Diploma in Agricultural Chemistry, Botany, Zoology, and Veterinary Science.

"(b) Whether the Examination should not be confined to the Management of Stock, and the practical working of a farm, including Book-keeping, Land Surveying, and Farm Machinery.

"(c) Whether an Examination on the lines of (b) should not be provided for young lads who hold the Day School Certificate (Higher) in Agricultural Science, provided they have worked on a farm for, say, three years."

Mr Armour made a full statement in support of the various proposals embraced in his Motion.

The CHAIRMAN said that, before asking any one to second the Motion, he would point out that (a) and (b) had already been considered by the Education Committee. They were to discuss the matter with the representatives of the Royal Agricultural Society on Friday, and they had been specially asked to take no steps until that consultation had taken place. The Committee, therefore, did not propose to report until after that Meeting. The proposal under heading (c) was a totally different matter, and had nothing to do with the N.D.A. It proposed an entirely new form of Examination.

The Motion was then seconded by Dr T. G. NASMYTH, and agreed to.

Scottish National Milk and Health Association.

Application for Grant.—A letter was submitted from the Scottish National Milk and Health Association, referring to the fact that a Grant of £100 was given towards the preliminary expenses of the Association last year, and applying for a renewal of the Grant for the ensuing year.

The SECRETARY said that this matter had been considered by the Finance Committee that morning, and a Minute on the subject was read and approved.

The Minute recommended that consideration be deferred until further information was obtained regarding the Association's financial position, and the representation of the various bodies on the Council of the Association.

Appointment of Representative.—Mr JOHN SPEIR, Newton, having intimated his resignation as the Society's representative on the Council of the above Association, it was unanimously agreed, on the motion of Sir DAVID WILSON, Bart., that Lieut.-Colonel W. T. R. Houldsworth of Kirkbride be appointed representative of the Society in his place.

Finance.

A Minute of Meeting of Finance Committee, dated 6th April, was submitted and approved.

The Minute stated that an application had been received from the inhabitants of St Kilda for a supply of flour and oatmeal, and it was recommended that a supply be sent, similar to that provided in June 1923, the order to be placed, as before, with Messrs Robert Walls & Sons, Kerse Mills, Stirling.

MEETING OF DIRECTORS, 4TH MAY 1927.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—*Vice-President*—Mr J. T. M'Laren, The Leuchold, Dalmeny. *Ordinary Directors*—Mr Harry Armour; Mr Norman H. Constable; Mr Thomas Elder; The Earl of Elgin and Kincardine, C.M.G.; Mr John Elliot; Mr W. P. Gilmour; Mr James M'Laren; Mr Robert Macmillan; Mr James M'Queen; Dr T. G. Nasmyth; Mr Alfred H. Reid; Major R. W. Sharpe; Mr A. A. Hagart Speirs; Brig.-General Archibald Stirling; Mr Phipps O. Turnbull. *Extraordinary Directors*—Colonel F. J. Carruthers; Mr William Duncan; Sir Henry Dundas, Bart., M.V.O.; Mr James Elder; Mr A. Thornton Hunter; Mr George G. Mercer; Mr G. Bertram Shields; Major Mark Sprot; Mr John Stewart. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Consulting Engineer*—Professor R. Stanfield.

The Late Colonel John L. Reid.

Before proceeding with the business of the Meeting, the CHAIRMAN made sympathetic reference to the death, since last Meeting, of one of their former colleagues, Colonel John L. Reid of Cromleybank, Ellon, who was an Ordinary Director from 1918 to 1922, and an Extraordinary Director in 1923 and 1924. He had also acted as a Judge of Shorthorns at the Society's annual Shows. He was a very prominent man in the Shorthorn world, and devoted much of his time to many departments of public business.

A resolution of regret and sympathy was adopted, the members present up-standing, and the Secretary was instructed to forward a copy thereof to the son of the deceased.

Letters.

The following letters were submitted :—

The Scottish National Union of Allotment Holders.—Thanks for Grant of £15 for the encouragement of allotment gardens.

National Farmers' Union of Scotland.—Thanks for free site at Show. Thanks for agreeing to entertain party of South African farmers.

Edinburgh Show, 1927.

A Minute of Meeting of Shows Committee, dated 4th May, was read and approved.

The Minute dealt with the following matters :—

Cottage Ranges and Grates.—Draft regulations, as prepared by the special Sub-Committee, were submitted and approved.

Suffolk Horses.—On an application from the Suffolk Horse Society, supported by the Duke of Montrose, it was decided to accept an entry of four Suffolk Horses for exhibition only.

Local Committee.—The SECRETARY reported that, at a Meeting of Committee on 13th inst., additional Attending Members had been appointed on the various classes of stock.

Long Service Awards.

A Minute of Meeting of Shows Committee, dated 4th May, was submitted and approved.

The Minute stated that, in accordance with the further remit from the Board at last Meeting, the Sub-Committee had reconsidered its report, and now recommended that the Gold Medal and Special Certificate be given for 45 years' approved service, instead of 50 years, as previously recommended. In other respects their report remained unaltered. The Shows Committee had approved of the report, and recommended its adoption by the Directors.

Allotment Gardens.

A Minute of Meeting of Shows Committee, dated 4th May, was read and approved.

The Minute recommended approval of a suggested scheme, which had been submitted by the Scottish National Union of Allotment Holders, for the award of Medals and Prizes during 1927. The scheme proposed that in eight districts, viz., Aberdeen, Arbroath, Dundee, Greenock, Dumfries, Govan, Edinburgh, and Glasgow, a prize of £1 and a medium silver medal be offered. The award in each case would go to the best plot in the area, and the judging, which would take place at two separate times, would be arranged for by the local associations.

National Diploma in Agriculture.

A Minute of Meeting of Education Committee, dated 4th May, was submitted.

The Minute stated that the Education Committee had, at several Meetings, considered the letter from the Board of Agriculture for Scotland, dated 22nd January, forwarding a copy of the following resolution passed at a Conference of Principals of Agricultural Colleges of England and Wales and Scotland, held in London on 6th December last.

"That the National Diploma be reformed so as to make it a strong examination on the business side of farming, but that a recognised College Diploma be accepted for the academic side of the training."

The Committee had also discussed the matter with the representatives of the Royal Agricultural Society of England, at a Meeting of the National Agricultural Examination Board held at Leeds on 8th April. At that Meeting the following Resolution was unanimously adopted :—

"That the National Agricultural Examination Board, having had before them the Resolution of the Conference called by Sir Daniel Hall, and having read the shorthand notes of the Conference, observe with regret that no constructive proposals have been put forward.

"They do not consider that a post-graduate course, as vaguely outlined, is a workable or practical suggestion; but they are willing to strengthen the Examination on the practical and business side of Agriculture, and would be glad to consider any concrete suggestion which the Principals of Colleges and the representatives of the Ministry as a body care to make.

"As regards the acceptance of a recognised College Diploma this would be a matter requiring great consideration, as some Colleges do not issue a Diploma, and some College Diplomas may not be of a type or standard suitable for the Examination."

The Committee recommended that the Directors approve of the foregoing Resolution, and that a reply in terms thereof be sent to the Board of Agriculture.

The Committee had also considered the Motion adopted at last Meeting, as moved by Mr HARRY ARMOUR. With regard to sections (a) and (b) thereof, they pointed out that a reply thereto was provided by the Resolution above-mentioned. With regard to section (c) thereof, it was recommended that an inquiry be addressed to all Education Authorities throughout Scotland, requesting information as to the steps they were taking (if any) to provide education in Agricultural subjects in their Schools.

The CHAIRMAN, in moving adoption of the Minute, dealt at length with the various proposals which had been made during recent years for altering and modifying the examination for the National Diploma, and made a full statement as to the reasons which led the Committee to decline to adopt these proposals.

Mr J. T. M'LAREN seconded, and the Minute was unanimously adopted.

Scottish National Milk and Health Association.

A Minute of Meeting of Finance Committee, dated 4th May, was submitted and approved.

The Minute stated that the Committee had considered the application for a grant of £100 for the current year. Last year a grant of £100 was given towards the preliminary expenses of the Association. It was recommended that a grant of £100 be given for the current year.

It was unanimously agreed to nominate Mr W. P. Gilmour, Balmangan, as a second representative of the Society on the Council of the Association.

Animal Diseases Research Association.

A Minute of Meeting of Finance Committee, dated 4th May, was submitted and approved.

The Minute stated that the Committee had considered a communication from the Animal Diseases Research Association, in which reference was made to the grant of £200 given last year, and applying for a renewal of the grant. It was recommended that a grant of £200 be given for the current year.

Mr G. G. MERCER, as Convener of the Finance Committee of the Association, referred to the work which the Association were carrying out, and thanked the Directors for the renewed grant.

Show of 1929.

The Special Committee appointed at the Meeting in February last reported that, as a result of an inspection of the King's Park, Stirling, by the Convener, Secretary, Consulting Engineer, and Showyard Erector, it was found that sufficient space was not now available there for the holding of the Show. A considerable part of the former site was occupied by tennis courts and a putting green.

It was accordingly agreed to appoint the following Committee as a Sites Committee to ascertain if any other suitable site were available in the Stirling Show Division for the Show of 1929: Mr James M'Laren (*Convener*), Colonel F. J. Carruthers, Mr J. E. Kerr, Mr J. T. M'Laren, Mr Robert Macmillan, Mr Alexander Murdoch, Mr Alexander Robertson, Mr G. Bertram Shields, Brig.-General Archibald Stirling, Sir David Wilson, Bart., Professor R. Stanfield, and the Secretary.

Proposed Quarantine Station for Scotland.

The SECRETARY reported that he had received information from the Board of Agriculture for Scotland to the effect that they proposed to call shortly a Conference of representatives of this Society and Breed Societies in Scotland, to consider as to taking steps to secure the provision of a Quarantine Station for Scotland. It was agreed that the following be appointed to represent the Society in the event of such a Conference being called: Colonel F. J. Carruthers, Lieut.-Colonel W. T. R. Houldsworth, Mr J. E. Kerr, and Mr J. T. M'Laren.

MEETING OF DIRECTORS, 1st JUNE 1927.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—Ordinary Directors—Mr Norman H. Constable; Hon. T. G. P. Corbett; Mr James Durno; Mr Thomas Elder; The Earl of Elgin and Kincardine, C.M.G.; Mr John Elliot; Mr William Elliot; Mr W. P. Gilmour; Mr James Gray; Mr William C. Hunter; Mr J. Ernest Kerr; Mr William Low; Mr James M'Clean; Mr James M'Laren; Mr James M'Queen; Dr T. G. Nasmyth; Mr Alexander Niven; Mr William S. Niven; Major R. W. Sharpe; Mr A. A. Hagart Speirs; Mr Phipps O. Turnbull. *Extraordinary Directors*—Colonel F. J. Carruthers; Sir James Inglis Davidson; Mr William Duncan; Colonel W. Wingate Gray; Lieut.-Colonel W. T. R. Houldsworth; Mr Alexander Murdoch; Mr Alexander Robertson; Mr G. Bertram Shields; Mr John Stewart; Mr George Will. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Chemist*—Dr J. F. Tocher.

The Late Mr Duncan M. Wallace.

Before proceeding with the business of the Meeting, the CHAIRMAN made sympathetic reference to the death of Mr Duncan M. Wallace, of the firm of John Wallace & Sons, Ltd., Glasgow. Mr Wallace, he said, was an Ordinary Director from 1917 to 1921, and an Extraordinary Director in 1925, when the Show was held in Glasgow. He was well known in Agricultural Engineering circles, especially in the West of Scotland, and, besides, was a sheep farmer on an extensive scale in Stirlingshire.

A resolution of regret and sympathy was adopted, the members present up-standing, and the Secretary was instructed to forward a copy thereof to the relatives of the deceased.

Edinburgh Show, 1927.

Visit of South African Farmers.—The Special Committee appointed on 6th April reported that arrangements had now been made for the Dinner, at which the South African visitors were to be entertained, to take place in the Oak Hall, Crawford's, 70 Princes Street, Edinburgh, on Tuesday, the 26th July, at 8 P.M. Further details were in course of arrangement.

Hunters.—A letter was submitted from Lieut.-Colonel A. J. King, of the Remount Department, Scottish Command, suggesting that young Hunter Stock be allowed to leave the Showyard at the end of the second day of the Show, instead of being required to remain all four days.

After discussion, it was moved by Major R. W. SHARPE, and seconded by Lieut.-Colonel W. T. R. HOULDSWORTH, that the request be complied with.

Mr THOMAS ELDER moved the previous question, and this was seconded by Dr T. G. NASMYTH.

On a vote being taken, the previous question was carried by 24 votes to 4.

Suffolk Horses.—On an application from the Suffolk Horse Society, it was agreed that the Suffolk Horses, entered for exhibition only, be brought out for the afternoon parade, as well as for the forenoon parade, at the Show.

Percheron Stallion.—On an application from Messrs J. Baird & Co., Ltd., Falkirk, it was agreed to accept an entry of a Percheron Stallion for exhibition only.

Dorset Horn Wool.—It was agreed to accept, for exhibition only, an entry by the Earl of Elgin of three fleeces of Dorset Horn Wool, and one fleece of Dorset Down-Hebridean Cross Wool.

Cottage Ranges and Grates.—The following were appointed to act as judges of Cottage Ranges and Grates: Mr Richard Baillie, Pencaitland; Mrs C. Blair, Hoprig Mains, Gladsmuir; Mr Thomas Strachan, Keir Estates, Dunblane.

General Arrangements.—The SECRETARY reported that the work on the Showyard was proceeding in a satisfactory manner. The Town Council had carried out such levelling of the bunkers on the Golf Course as was found necessary, and ample space was available. The applications for stands in the Implement Section totalled 9800 feet of frontage, which was 2300 feet more than at Kelso, and also more than at Glasgow two years ago. The Stock entries, which closed next day, were coming in well, and a large entry appeared to be assured.

Arrangements had been made with the City Authorities whereby accommodation at Saughtonhall Mains Farm would be available as an Isolation Station for animals, in the event of such being required.

Animal Diseases Research Association. Scottish National Milk and Health Association.

On the Motion of the CHAIRMAN, it was unanimously agreed to confirm the recommendations adopted at last Meeting, that a grant of £200 be given for the current year to the Animal Diseases Research Association, and a grant of £100 to the Scottish National Milk and Health Association.

'Transactions.'

A Minute of Meeting of Publications Committee, dated 1st June, was read and approved.

The Minute recommended payments to writers of articles, in the current volume of 'Transactions,' amounting to £152, 6s.

A suggestion by Mr THOMAS ELDER, that the size of the volume be curtailed, and the expenditure thereon correspondingly reduced, was remitted to the Publications Committee for consideration and report.

Proposed Quarantine Station for Scotland.

The CHAIRMAN reported that a Conference, called by the Board of Agriculture on 25th May, had decided that it was desirable to have a Live Stock Quarantine Station in Scotland, if there are to be Quarantine Stations in England, and that the Highland Society be requested to initiate the movement for a Station, and undertake its management if, and when, established. The Royal Agricultural Society had taken up the matter in England, and, he thought, there would be established a Quarantine Station in London, and possibly another at Liverpool. If that were done, the probability was that the Dominions and Colonies would demand that Stock from Scotland should also come through a Quarantine Station. It would be very inconvenient if breeders of Stock in Scotland had to send either to Liverpool or London, and, practically in self-defence, it seemed to be necessary to have a Quarantine Station in Scotland.

The representatives of the various Breed Societies at the Conference were in favour of a Quarantine Station being established, and it appeared to the Conference that the only body which could initiate the movement and undertake its management was that Society. An application would require to be made forthwith to the Empire Marketing Board, which had already agreed to provide the funds necessary for the Station in London.

On the Motion of Dr T. G. NASMYTH, seconded by the EARL OF ELGIN, it was agreed to give general approval to the proposal to establish a Quarantine Station for Scotland; and it was remitted to the Chairman, Dr T. G. Nasmyth, and Mr Alexander Murdoch to make inquiries as to a suitable site, and report.

Argyll Naval Fund.

A Minute of Meeting of Argyll Naval Fund Committee, dated 1st June, was read and approved.

The Minute recommended the appointment of Hector Charles Donald MacLean to a vacancy in the list of beneficiaries.

MEETING OF DEPUTATION OF DIRECTORS HELD IN
SHOWYARD, EDINBURGH, 27TH JULY 1927.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—Ordinary Directors—Mr Norman H. Constable; The Hon. T. G. P. Corbett; Mr James Durno; Mr Thomas Elder; The Earl of Elgin and Kincardine, C.M.G.; Mr John Elliot; Mr Thomas Elliot; Mr William Elliot; Mr Alexander Forbes; Mr W. P. Gilmour; Mr Alexander P. Gordon; Mr Peter Grant; Mr Athole S. Hay; Mr William C. Hunter; Mr J. Ernest Kerr; Mr

William Low; Mr James M'Clean; Mr James M'Laren; Mr Robert Macmillan; Mr James M'Queen; Mr Alexander Munro; Dr Thomas G. Nasmyth; Mr Alexander Niven; Mr William S. Niven; Mr Alfred H. Reid; Major Robert W. Sharpe; Mr A. A. Hagart Speirs; Mr Phipps O. Turnbull. *Extraordinary Directors*—Colonel F. J. Carruthers; Sir James Inglis Davidson; Mr William Duncan; Lieut.-Colonel W. T. R. Houldsworth; Mr George G. Mercer; Mr Robert Miller; Mr Alexander Murdoch; Mr Alexander Robertson; Mr G. Bertram Shields; Mr John P. Sleigh; Major Mark Sprot; Mr John Stewart. *Honorary Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Consulting Engineer*—Professor R. Stanfield.

Protests.

The SECRETARY reported that no Protests had been lodged.

Horses Entered for Exhibition only.

It was agreed that the Society's Large Silver Medal be awarded to each of the four Suffolk Horses, and to the Percheron Stallion, entered for exhibition only, and the Secretary was instructed to write to the Suffolk Horse Society, and to Messrs J. Baird & Co., Ltd., intimating these awards.

Committee on Land Settlement in Scotland.

A letter was submitted from the Secretary of the Committee on Land Settlement in Scotland, inviting the Society to appoint representatives to give evidence before the Committee.

It was unanimously agreed to request Mr Thomas Elliot, Sciberscross, Rogart, and Mr A. P. Gordon of Bindal, Portmahomack, to give evidence before the Committee on behalf of the Society.

Wild White Clover.

A letter was submitted from the Board of Agriculture for Scotland, containing the findings of a Committee with regard to the investigations carried out by them with eighteen samples of deliveries of Wild White Clover seed.

MEETING OF DIRECTORS, 2ND NOVEMBER 1927.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, and afterwards Mr JAMES M'LAREN, Cornton, Bridge of Allan, in the Chair.

Present.—*Vice-President*—Mr Falconer L. Wallace of Candacraig and Balcarnie, Strathdon. *Ordinary Directors*—Mr Harry Armour, J.P.; Mr Norman H. Constable; Hon. T. G. P. Corbett; Lieut.-Colonel T. W. Cuthbert, C.M.G., D.S.O.; Sir James Inglis Davidson; Mr James Durno; Mr John Elliot; Mr William Elliot; Mr W. P. Gilmour; Mr George Grant; Mr Peter Grant; Mr Athole S. Hay; Mr William C. Hunter; Mr J. Ernest Kerr; Mr William Low; Mr James M'Laren; Mr Robert Macmillan; Mr James M'Queen; Mr William Meiklem; Dr T. G. Nasmyth; Mr Alexander Niven; Mr John W. Prentice; Mr Alfred H. Reid; Hon. Walter T. H. Scott; Mr Phipps O. Turnbull. *Extraordinary Directors*—Mr William Anderson; Colonel F. J. Carruthers; The Earl of Elgin and Kincardine, C.M.G.; Mr James R. Lumsden; Mr Alexander Murdoch; Bailie William Poole, J.P.; Major R. W. Sharpe; Mr G. Bertram Shields; Mr John Stewart; Colonel Robert W. Walker. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

The Late Mr Gilbert Davidson, Burnfoot, Hawick.

Before proceeding with the business of the Meeting, the CHAIRMAN referred to the loss the Society had sustained through the death of a most valued colleague, Mr Gilbert Davidson, Burnfoot, Hawick. He was, he said, one of the best-known farmers in the Border District, and besides being an extensive breeder was also a very able judge of stock.

A Minute of regret and sympathy was submitted and adopted, the members present upstanding, and the Secretary was instructed to forward a copy to Mrs Davidson and the family of the deceased.

The Late Mr George W. Constable, Traquair.

The CHAIRMAN also referred in sympathetic terms to the death of Mr George W. Constable, Traquair, Innerleithen, who had been a member of the Society for thirty-five years, and who had rendered valuable services as a Director during several periods of office. During a long and close connection with the Border District he took a very prominent part in public business, and especially in everything pertaining to Agriculture.

A Minute of regret and sympathy was submitted and adopted, the members present upstanding, and the Secretary was instructed to forward a copy to the family of the deceased.

Chairman of the Board for 1927-1928.

On the Motion of the CHAIRMAN, Colonel F. J. Carruthers of Dormont, Lockerbie, seconded by Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Mr James M'Laren, Cornton, Bridge of Allan, was unanimously elected Chairman of the Board for the ensuing year.

Mr JAMES M'LAREN, on taking the Chair, thanked the Directors for the honour they had done him.

On the Motion of Mr M'LAREN, a cordial vote of thanks was accorded to Colonel F. J. Carruthers for his services to the Society as Chairman of the Board of Directors during the past two years.

Colonel CARRUTHERS suitably acknowledged, and thanked the Board and Chairman for the expression of appreciation of his services.

Representatives on Other Bodies.

The following were appointed representatives of the Society on the Boards of the undernoted institutions for the ensuing year—viz.: *National Agricultural Examination Board*—James M'Laren, Cornton, Bridge of Allan, to fill the vacancy caused by the retirement of J. T. M'Laren. *Edinburgh and East of Scotland College of Agriculture*—John Stirton, Secretary, Highland and Agricultural Society. *West of Scotland Agricultural College*—Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip. *Aberdeen and North of Scotland College of Agriculture*—Dr J. F. Tocher, 41½ Union Street, Aberdeen. *Royal (Dick) Veterinary College*—Dr Thomas G. Nasmyth, Canaan Lodge, Canaan Lane, Edinburgh. *Glasgow Veterinary College*—Alexander Murdoch, East Hallside, Hallside, Lanarkshire. *Scottish Milk Records Association*—W. P. Gilmour, Balmangan, Kirkeudbright; Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B.; Alexander Murdoch. *Standing Committee of Management of Scottish Plant Registration Station*—Sir David Wilson, Bart.; James Elder, Athelstaneford Mains, Drem; G. Bertram Shields—for five years from 1st January 1926.

Vacancy on Board.

It was remitted to the three Ordinary Directors for the Border Show Division to bring forward, at next Meeting, the name of a Director to fill the vacancy caused by the death of Mr Gilbert Davidson.

Letters.

The following letters were submitted :—

Mrs Duncan M. Wallace.—Thanks for Minute of sympathy on the death of her husband, the late Duncan M. Wallace.

Highland Reel and Strathspey Society.—Thanks for use of Society's Hall.

Scottish Savings Committee.—Thanks for free stand at Edinburgh Show.

Suffolk Horse Society.—Thanks for Silver Medals awarded to Suffolk Horses exhibited at Edinburgh Show.

Royal Scottish Arboricultural Society.—Thanks for space for exhibition of timber, &c., and Grant of £40, at Edinburgh Show.

Mr John MacLeod, St Kilda.—Thanks for consignment of Flour and Meal for use of Islanders.

Sheep Worrying.

A letter was read from the Secretary of the Blackface Sheep Breeders' Association, forwarding copy of a communication addressed by that Association to the Secretary of State for Scotland, with regard to damage done to sheep by dogs.

After some discussion it was agreed to remit the matter to the General Purposes Committee for consideration and report.

Railway Carriage of Drain Tiles.

Letters were submitted from Messrs Gold and Company, Limited, Glasgow, with regard to a proposed increase in the rates of carriage of drain tiles. The Secretary was authorised to write a letter supporting the appeal which was being made to the Railway Rates Tribunal on the subject.

Edinburgh Show, 1927.

Accounts.—The SECRETARY reported that a summary of accounts of the Edinburgh Show had that day been submitted to the Finance Committee. These accounts showed a probable credit balance of about £2047.

In comparing this result with that of Glasgow Show in 1925, when there was a credit balance of £4100, the Secretary said that at Glasgow the Society received from the Corporation a donation of £525, and also certain free services which in Edinburgh cost £175. At Edinburgh, also, they had to pay £500 for the use of the ground. That accounted for £1200 of the difference. The remaining £850 was due to a reduction in the drawings at the gates, which might be accounted for either by the existing agricultural depression, or by the fact that the Show was held at a date which was not suitable for securing a large attendance of the Edinburgh public.

List of Awards.—The List of Awards at Edinburgh Show was laid on the table.

Aberdeen Show, 1928.

Date of Show.—On a recommendation of the Shows Committee, it was agreed that the date of the Show be fixed for Tuesday, 24th July, and three following days.

Judges.—The following were appointed a Selection Committee to draw up panels of Judges for consideration at next Meeting: Mr Harry Armour, Colonel F. J. Carruthers, Mr N. H. Constable, Mr James Durno, Mr John Elliot, Mr William Elliot, Mr W. P. Gilmour, Mr William C. Hunter, Mr J. E. Kerr, Mr Robert Macmillan, Mr Alexander Murdoch, Mr G. Bertram Shields, with the Chairman, Treasurer, and Honorary Secretary, *ex officio*.

Forage.—The following Committee was appointed to make arrangements for the supply of Forage, and report to the Board—Mr James Durno (*Convener*), Mr William Anderson, Mr John Elliot, Mr Alexander Forbes, Mr W. P. Gilmour, Mr James M'Laren, Mr Alexander Murdoch, Mr A. H. Reid, Mr William Reith, Mr G. Bertram Shields, Mr John Stewart, and Mr Phipps O. Turnbull.

Hotel Accommodation and Catering in Showyard.—It was remitted to the Chairman of the Board, the Chairman of the Shows Committee, the Convener of the Local Committee, the Steward of Catering, and the Secretary to make the necessary arrangements.

Show Contracts.—It was remitted to the following Special Committee, with powers, to arrange the contract for timber, and other contracts in connection with the Showyard—Mr Alexander Forbes (*Convener*), Colonel F. J. Carruthers, Mr James Durno, Mr John Elliot, Mr James M'Laren, Mr W. S. Niven, Mr A. H. Reid, Sir Hugh Shaw Stewart, Bart., C.B., Mr John Stewart, Brig.-General Archibald Stirling, Colonel Robert W. Walker, and Professor R. Stanfield.

Police.—It was remitted to the Secretary to make the necessary arrangements for police supervision in the Showyard.

Music.—The Secretary was instructed to make the necessary arrangements for Music in the Showyard.

Forestry Exhibition.—It was agreed that, as usual, space be granted to the Royal Scottish Arboricultural Society for an exhibition of timber, and also a grant of £40 towards the expenses of the exhibition.

Prize List and Regulations.—The SECRETARY stated that the Shows Committee had met on 1st November, and had revised the Premium List and Regulations for the Aberdeen Show. It was agreed that, as usual, their report be printed and issued for consideration in detail at next Meeting of the Board.

Royal Northern Agricultural Society.—A letter was read from the Secretary of the Royal Northern Agricultural Society with regard to certain privileges being granted to Members of that Society in connection with the Aberdeen Show. After a statement by Colonel ROBERT W. WALKER, it was agreed that the matter be remitted to the Finance Committee for consideration and report.

Special Prizes.—A large number of Special Prizes were accepted, and votes of thanks accorded to the donors.

Dentition of the Pig.

An application was submitted from the Scottish National Association of Pig-Breeders for a Grant towards the expenses of an investigation into the Dentition of the Pig as indicative of age. The investigation was being carried out at the Royal (Dick) Veterinary College. It was agreed that the application be remitted to the Finance Committee for consideration and report.

Importation of Pedigree Animals Act, 1925.

The SECRETARY reported that a letter had been received from the Ministry of Agriculture and Fisheries, on 28th September, with regard to the proposed importation by the Afrikaner Cattle-Breeders' Society of a pure-bred registered Afrikaner Bull and two Cows from South Africa, for the purpose of presentation to His Majesty the King. After consultation with the Chairman of Directors, he had written to the Ministry to the effect that this Society approved of the Herd-Book in which the animals were registered. The action of the Chairman and Secretary was approved.

Proposed Quarantine Station for Scotland.

The CHAIRMAN reported that the Committee appointed on 1st June were actively pursuing the search for a suitable site in Glasgow for the proposed Station. Various sites had been visited and inspected, and it was hoped that some definite recommendation would be submitted at an early date.

Publications.

A Minute of Meeting of Publications Committee, dated 2nd November, was read and approved.

The Minute stated that the Committee had considered the remit from the Board on 1st June, with regard to the suggestion that the size of the volume of 'Transactions' be curtailed, and the expenditure thereon correspondingly reduced. After careful consideration, the Committee were of opinion that any possible reduction in the size of the volume, or in the matter therein contained, would achieve a very small reduction in the total cost to the Society, and they accordingly recommended that the volume continue to be issued as at present.

International Commission of Agricultural Associations.

Colonel F. J. CARRUTHERS reported that, as the representative of the Society, he had been invited and proposed to attend the first Meeting of the Permanent International Commission of Agricultural Associations to be held at Rome from the 7th to the 10th inst. Sir DAVID WILSON, Bart., said the Society was indebted to Colonel Carruthers for undertaking this duty.

Finance.

A Minute of Meeting of Finance Committee, dated 2nd November, was submitted and approved.

The Minute recommended that the Grant of £100 to the Scottish Agricultural Organisation Society be renewed for the ensuing year.

MEETING OF DIRECTORS, 30TH NOVEMBER 1927.

Mr JAMES M'LAREN, Cornton, Bridge of Allan, in the Chair.

Present.—*Vice-President*—The Marquess of Aberdeen and Temair, K.T., House of Cromar, Tarland. *Ordinary Directors*—Mr Harry Armour, J.P.; Mr Norman H. Constable; Hon. T. G. P. Corbett; Lieut.-Colonel T. W. Cuthbert, C.M.G., D.S.O.; Sir James Inglis Davidson; Mr James Durno; Mr John Elliot; Mr William Elliot; Mr W. P. Gilmour; Mr Alexander P. Gordon; Mr George Grant; Mr William C. Hunter; Mr William Low; Mr James M'Clean; Mr James M'Laren; Mr Robert Macmillan; Mr James M'Queen; Mr Alexander Munro; Dr T. G. Nasmyth; Mr William S. Niven; Sir Thomas Paxton, Bart., LL.D.; Mr John W. Prentice; Mr Alfred H. Reid; Hon. Walter T. H. Scott; Mr Phipps O. Turnbull. *Extraordinary Directors*—Mr William Anderson; Bailie James C. Booth; Colonel F. J. Carruthers; Mr James Cruickshank; Mr Alexander Forbes; Captain W. S. Grant; Captain E. F. Lumsden; Mr James R. Lumsden; Mr Alexander Murdoch; Mr William Reith; Major R. W. Sharpe; Mr G. Bertram Shields; Colonel Robert W. Walker; Mr John Duthie Webster. *Consulting Engineer*—Professor R. Stanfield.

Letters.

The following letters were submitted :—

Mr N. H. Constable.—Conveying thanks for Minute of sympathy on the death of his father, the late Mr George W. Constable.

Commonwealth of Australia.—Communicating a summary of the present position regarding the export of animals from Great Britain and Ireland to the Commonwealth of Australia.

Importation of Pedigree Animals Act, 1925.

A letter was submitted from the Ministry of Agriculture and Fisheries, stating that an application had been received by the Ministry for authority to import four Duroc Jersey Pigs from Canada. It was pointed out that these pigs were registered in the Herd-Book of the Canadian Swine-Breeders' Association, which is incorporated in the National Live Stock Records of the Canadian Government. It was further pointed out that, in May 1926, on the occasion of the proposed importation of a number of Pedigree Tamworth Pigs from Canada, this Society agreed to the recognition of the Herd-Book of the Canadian Swine-Breeders' Association for the purposes of the Importation of Pedigree Animals Act, 1925.

It was agreed that the Society concur in the recognition of the Herd-Book of the Canadian Swine-Breeders' Association, in accordance with the provisions of the Act above referred to.

Vacancy on Board.

On behalf of the Ordinary Directors in the Border Show Division, Major ROBERT W. SHARPE moved, and the MASTER OF POLWARTH seconded, that Mr J. P. ROSS Taylor, Mungoswells, Duns, be nominated as an Ordinary Director to fill the vacancy caused by the death of the late Mr Gilbert Davidson. This was unanimously agreed to.

Aberdeen Show, 1928.

Prize List.—A Report of the Shows Committee of 1st November, which had been printed and circulated, was submitted, considered in detail, and approved.

Milk Yield Certificates.—The Hon. Mr T. G. P. CORBETT, on behalf of the Sub-Committee appointed by the Shows Committee on 1st November, moved that the following new Rule be added to the Regulations relating to Milk Yield Certificates which appeared at the top of the Ayrshire Classes in the Prize List, and this was agreed to:—

"In the case of a cow which has no milking pedigree, and which has not completed her first lactation at date of entry, but is likely to calve again before date of Show, such cow may be provisionally entered on her own milk yield produced within forty weeks after first calving, but when the cow has calved again a further certificate in terms of the Rules must be obtained and produced before the cow is allowed to enter the judging ring. The latter certificate is the standard of qualification, and failure to produce such will render the cow liable to disqualification, and no entry money will be returned."

Showyard.—Professor STANFIELD reported that there would be no difficulty in providing better accommodation for the Attendants on Goats, and larger boxes for Aged and Three-year-old Draught Geldings and Aged and Three-year-old Yeld Mares.

With regard to the numbering of the Goat pens, time would not permit of the numbers being painted on wood, but means would be taken to see that the printed cards were so placed that they could not be destroyed.

Accommodation for Ayrshire and British Friesian Cows, New Rule, &c.—A Minute of Meeting of Shows Committee, dated 30th November, was read and approved.

The Minute dealt with the following matters:—

Accommodation for Ayrshire and British Friesian Cows.—It was recommended that, in future, Ayrshire and British Friesian Cows be housed in the ordinary shedding, the roof of the shedding being extended a matter of four or five feet on each side, so as to provide a covered way behind the animals.

New Rule.—It was recommended that the following new Rule be inserted in the Regulations for the forthcoming Show:—

"12. In the event of the entries in any section of Cattle, Horses, Sheep, Goats, or Pigs, being less in number than an average of three per class, or the number of different exhibitors in the section being less than three, the classes for that section shall be cancelled automatically for the year, and the entry fees returned."

Convener of Local Committee.—On the Motion of Mr ALEXANDER FORBES, seconded by Mr JAMES DURN, Mr Falconer L. Wallace of Candacraig and Balcarn was unanimously appointed Convener of the Local Committee of Management.

Appointment of Judges.—The SECRETARY reported that, at a Meeting of the Board in Committee, on 29th November, Judges had been appointed for the various classes of Stock. These were being communicated with, and, after replies were received, the List of Judges would be published in the Press.

Royal Northern Agricultural Society.—The Finance Committee reported that, in accordance with the remit from the Board at last Meeting, they had considered the letter, dated 29th October, from the Royal Northern Agricultural Society with regard to the granting of privileges to members of that Society in connection with the forthcoming Show at Aberdeen. The suggestion was that a complimentary ticket for the Tuesday of the Show be given to members of the Royal Northern Agricultural Society who were not members of this Society, and that, in the event of such privilege being granted, the Royal Northern Agricultural Society would give a donation to the funds of the Show. The Finance Committee stated that, after careful consideration, they could not see their way to recommend that the application be granted. The Committee's finding was adopted.

Special Prizes.—A number of Special Prizes were accepted, and votes of thanks accorded to the donors.

The SECRETARY intimated that Lord Aberdeen, who was present at the Meeting, had handed to him an offer of a prize of a Silver Cup for competition in any

class the Directors might suggest, and also a prize by the Marchioness of Aberdeen, for the Goat Section, with special reference to milk giving. The conditions of those prizes would require to be adjusted, and would come formally before the Directors at next Meeting.

Dentition of the Pig.

The Finance Committee reported that, in accordance with the remit from the Board, they had considered the application from the Scottish National Association of Pig-Breeders for a Grant towards the expenses of the Investigation at present being conducted at the Royal (Dick) Veterinary College on the question of the Dentition of the Pig as indicative of age. The Committee recommended that a Grant of £20 be given towards the cost of this investigation. The recommendation was unanimously approved.

Sheep Worrying.

A Minute of Meeting of General Purposes Committee, dated 30th November, was submitted and approved.

The Minute stated that the Committee had considered the letter from the Blackface Sheep-Breeders' Association, forwarding copy Resolutions passed by that Association on 7th September, with regard to the damage done to sheep stocks in Scotland by dogs.

It was agreed to recommend that the Society support the representation of the Blackface Sheep-Breeders' Association, that the law as it stands should be put into operation as strictly as possible, and especially that all applications for exemption should be strictly scrutinised, and that all non-working dogs on unfenced rights-of-way should be kept under control.

It was further agreed that the following addition to the existing law was desirable—That non-working dogs should be required to wear a collar at all times, bearing the owner's full name and address, and that working dogs should be required to have such a collar at all times when off the owner's own property. Special exemption might be given in the case of packs of hounds.

Quarantine Station for Scotland.

Colonel F. J. CARRUTHERS reported that the Committee had visited and inspected what they considered to be a suitable site for the proposed station in the vicinity of Ibrox Station, Glasgow. They had been in negotiation with the Railway Company, and had provisionally agreed as to the terms on which the ground might be acquired on lease. They were now proceeding with the preparation of Plans, and proposed to obtain Estimates for the necessary buildings and equipment, after which they would be in a position to prepare a complete statement of the probable cost, for submission to the Empire Marketing Board.

Scottish Agricultural Organisation Society.

On the Motion of the CHAIRMAN, it was unanimously agreed to confirm the recommendation, adopted at last Meeting, that a Grant of £100 be given for the ensuing year to the Scottish Agricultural Organisation Society.

International Commission of Agricultural Associations.

Colonel F. J. CARRUTHERS submitted a Report, which had been circulated to members of the Board, on the Meeting in Rome, on 7th to 10th November, of the International Commission of Agricultural Associations.

On the Motion of the CHAIRMAN, a cordial vote of thanks was accorded to Colonel Carruthers for representing the Society at the Meeting, and for his Report.

It was further agreed to remit to the Publications Committee to consider the best means of communicating to Members of the Society information which may be received from the International Institute of Agriculture.

Implement Committee.

A letter was read from Mr P. O. Turnbull, intimating that he could not see his way to accept the Convenership of the Implement Committee.

It was unanimously agreed that Mr William Low of Balmakewan be appointed Convener.

MEETING OF DIRECTORS, 4TH JANUARY 1928.

Mr JAMES M'LAREN, Cornton, Bridge of Allan, in the Chair.

Present.—Ordinary Directors—Mr Norman H. Constable; Hon. T. G. P. Corbett; Sir James Inglis Davidson; Mr James Durno; Mr John Elliot; Mr William Elliot; Mr W. P. Gilmour; Mr William C. Hunter; Mr James M'Laren; Mr William Meiklem; Dr T. G. Nasmyth; Mr Alexander Niven; Mr John W. Prentice; Brig.-General Archibald Stirling; Mr Phipps O. Turnbull. *Extraordinary Directors*—Colonel F. J. Carruthers; The Earl of Elgin and Kincardine, C.M.G.; Mr James R. Lumsden; Mr Alexander Murdoch; Mr William Reith; Mr G. Bertram Shields. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B.; *Auditor*—William Home Cook, C.A. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

Foot-and-Mouth Disease.

A letter was read from Mr J. P. Ross Taylor, Mungoswells, directing attention to the serious outbreak of foot-and-mouth disease covering a widespread area in England, and the increasing danger, unless more stringent measures were adopted, of the disease being introduced into Scotland. He suggested that the Directors petition the Ministry of Agriculture to prohibit all movement of Stock from England into Scotland.

In a subsequent letter he said that the precautionary measures taken by the Ministry in the north of England had now been published, and these seemed to meet the case in the meantime.

In these circumstances no action at that time appeared to be called for.

Finance.

A Minute of Meeting of Finance Committee, dated 4th January, was read and approved.

The Minute stated that the Accounts for the year 1926-1927, as prepared by the Society's Auditor, had been submitted and approved, and signed by two Members of the Finance Committee, and by the Auditor.

Aberdeen Show, 1928.

Stewards.—The Stewards of the various departments were appointed as follows: *Cattle*—Mr J. Ernest Kerr and Mr W. P. Gilmour; *Horses*—Mr Alexander Murdoch and Mr George Grant; *Sheep, Goats, Pigs, and Wool*—Mr R. Macmillan and Mr N. H. Constable; *Grand Stands*—Mr James M'Queen and Major Robert W. Sharpe; *Forage*—Mr James Durno and Mr John Prentice; *Gates*—Mr Alexander Forbes and Mr William S. Niven; *Implements*—Mr G. Bertram Shields and Mr Phipps O. Turnbull; *Poultry and Rabbits*—Mr James R. Lumsden; *Catering and Honey, &c.*—Mr William Elliot.

Veterinary Surgeon.—Mr William Brown, M.R.C.V.S., Aberdeen, was appointed Veterinary Inspector for Aberdeen Show, on the usual conditions.

Shire Horses.—A letter was read from the Secretary of the Shire Horse Society stating that the Special Committee appointed by the Council of that Society accepted, with sincere thanks, the offer to provide classes for Shire Horses at the Aberdeen Show. They suggested that three classes be provided as follows:—

Stallion or Colt, two years old and upwards.

Mare or Filly, two years old and upwards.

Gelding, three years old and upwards.

Stallions and Mares to be registered, or tendered for registration, in the Shire Horse Stud-Book, prior to the Show. Geldings to be sired by a registered Shire Stallion.

The Shire Horse Society offered to provide 40 per cent of the Prize Money, the prizes in each class to be similar to those offered for the corresponding class in the Clydesdale Section.

It was agreed to approve generally of these proposals, and further, that entries of Shire Horses be accepted at Member's rates.

The Special Committee also expressed their willingness to provide three prizes of £5, £3, and £2, for a class for foals, bred in Scotland, and got by a registered

Shire Stallion. While the Meeting viewed this proposal with favour, its adoption was deferred until consideration could be given to it in detail.

Shetland Ponies.—On a representation from the Shetland Pony Stud-Book Society, it was agreed to introduce a class this year for Geldings, with prize money, £8, £5, £3, and £2.

Suffolk Sheep.—Letters from the Secretary of the Northern Area of the Suffolk Sheep Society with regard to the conditions of award of the President's Champion Medal were submitted and referred to the Shows Committee for consideration and report.

Show Site.—The SECRETARY reported that, as a result of an inspection of the Showground by him and Professor Stanfield in November, he had represented to the Town Council of Aberdeen the desirability of permitting the Society to use the Fair Ground, which had originally been reserved, as part of the site for the Show. He had also pointed out the necessity of proceeding at once with the levelling of certain parts of the ground.

In a letter from the Town Clerk, dated 21st December, it was stated that the Town Council had agreed to grant the use of the Fair Ground, and had given instructions for the levelling to be proceeded with. They desired, however, to reserve a piece of the ground at the foot of Constitution Street up to the 31st of May, and this was agreed to.

Offer of Prizes by the Marquess and Marchioness of Aberdeen.—After full discussion, and a vote being taken, it was decided by a majority to suggest to the Marquess of Aberdeen that the Silver Cup be offered by him be awarded to the best Draught Gelding sired by a registered Clydesdale Stallion.

It was agreed that the Special Prize to be offered by the Marchioness of Aberdeen be awarded to the winner of the first prize in the Goat Milking Competition.

Shropshire Sheep.—A letter was read from Mr T. A. Buttar, Corston, Coupar-Angus, suggesting that, in order to encourage more entries of Shropshire Sheep, the class for Shearling Rams be altered to "Rams of any age," and the class for Shearling Ewes to "Ewes of any age." This was agreed to.

Special Prizes.—Special Prizes were accepted, and a vote of thanks accorded to the donors.

Science.

A Minute of Meeting of Science Committee, dated 4th January, was submitted and approved.

The Minute dealt with the following matters :—

Proposed Milk Investigation.—A Memorandum had been submitted by Dr Tocher with regard to a proposal that the Society give a Grant to carry out an Investigation into the daily variations in butter-fat and solids-not-fat of the milk of Commercial Dairy Herds. The proposal was that the Investigation should include not only the yields of individual cows, but also the bulked milk of Commercial Herds of various sizes.

After full consideration, it had been decided that, without committing the Society in any way, Dr Tocher be asked to prepare a detailed scheme, giving the number of herds whose bulked milk he proposed, in the first instance, to investigate, the probable duration of the Investigation, and the estimated cost. The detailed scheme would be considered by the Committee at a later date.

Proposed Grassland Conference.—A letter had been submitted from Sir Frederick Keoble, of Nitram Ltd., drawing attention to Conferences on Grassland Management which had been held in different parts of England and Wales, and suggesting that a Conference under the auspices of the Society might be held in the early part of the year. Letters were also submitted from Lord Bledisloe and Sir Robert Greig on the same subject.

After consideration, the Committee decided to report that the experiments in the intensive treatment of Grassland in Scotland were scarcely sufficiently advanced for the results to be published, but that after another year's results were known, a certain amount of data would be available. Under these circumstances, it was agreed to suggest that the subject was one which might, with advantage, be discussed by the Agricultural Section of the British Association at their Meeting in Glasgow in September.

Discoloration of Wool.—A further communication from the Skinners' Association of Scotland, with regard to the discoloration of wool on Sheepskins, was submitted. As the Skinners' Association suggested the appointment of a deputation to meet with a Committee of the Society, it was decided that the offer be accepted, and that the following Committee be appointed to meet with the representatives of the Skinners' Association: Sir David Wilson, Bart.; Mr James M'Laren; Mr John Elliot; Mr G. B. Shields; Major Robert W. Sharpe; Mr J. P. Ross Taylor; and Dr J. F. Tocher.

Proposed Quarantine Station.

A Minute of Meeting of Special Committee, dated 4th January, was read and approved.

The Minute reported that a letter had been received from the Ministry of Agriculture, in which it was stated that, after careful consideration, they had decided that the proposed site at Ibrox, Glasgow, was unsuitable for use as a Quarantine Station. It had accordingly been decided that the Committee proceed with its search for a suitable site, and it was proposed to visit Glasgow on 16th January, to inspect two other sites which were reported to be available.

Stirling Show, 1929.

A Minute of Meeting of Sites Committee, dated 4th January, was submitted and approved.

The Minute stated that the Committee had visited and inspected sites in Stirling and Bridge-of-Allan. The space now available in the King's Park, Stirling, was not adequate for the holding of the Show. A site which was considered suitable was inspected at Bridge of Allan, and the Railway Company was approached as to whether facilities for the handling of the Show traffic could be given at Bridge of Allan Station. Unfortunately, the Railway Company had replied that there were difficulties in the way of handling traffic at Bridge-of-Allan which appeared to be insuperable. The Committee accordingly proposed to proceed with their search for a suitable site in the Stirling Show Division.

Show of 1930.

Colonel F. J. CARRUTHERS of Dormont moved—"That provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1930 be held in the Dumfries Show Division."

The Motion was seconded by Sir DAVID WILSON, Bart., and unanimously agreed to.

New Members.

The SECRETARY intimated that there were 420 candidates for election as members of the Society at the Anniversary General Meeting to be held that afternoon. Of this total, the extraordinary number of 280 had been proposed by Mr James Durno, Crichtie, Inverurie.

On the Motion of the CHAIRMAN, it was agreed to thank Mr Durno for the excellent service he had thus rendered the Society.

(At this stage the Board sat in Committee.)

Finance.

A Minute of Meeting of Finance Committee, dated 4th January, was submitted and approved.

The Minute dealt with the following matters :—

Canvas Destroyed at Show.—The Committee had taken into consideration the extensive damage to the canvas in the Edinburgh Showyard, caused by a gale towards the end of June, when the Canvas Contractors, Messrs John Unite, Ltd., sustained a very heavy loss, and had decided to recommend that a sum of £250 be granted to Messrs Unite as a contribution towards the loss.

Office Salaries.—The Committee recommended the following increases in salaries of members of the Office Staff :—

Mr J. C. Yardley, Chief Clerk, from £375 to £400.

Mr J. J. Blake, from £175 to £200.

MEETING OF DIRECTORS, 1st FEBRUARY 1928.

Mr JAMES M'LAREN, Cornton, Bridge of Allan, in the Chair.

Present.—Ordinary Directors—Mr Harry Armour; Mr Norman H. Constable; Hon. T. G. P. Corbett; Lieut.-Colonel Thomas W. Cuthbert, C.M.G., D.S.O.; Mr John Elliot; Mr W. P. Gilmour; Mr George Grant; Mr William C. Hunter; Mr J. Ernest Kerr; Mr William Low; Mr James M'Clean; Mr James M'Laren; Mr Robert Macmillan; Mr James M'Queen; Mr William Meiklem; Dr T. G. Nasmyth; Mr Alexander Niven; Mr William S. Niven; Sir Thomas Paxton, Bart., LL.D.; Mr John W. Prentice; Hon. Walter T. H. Scott; Mr J. P. Ross Taylor. *Extraordinary Directors*—Colonel F. J. Carruthers; Mr James Cruickshank; Mr Alexander Forbes; Captain E. F. Lumsden; Mr James R. Lumsden; Mr Alexander Murdoch; Bailie William Poole, J.P.; Mr G. Bertram Shields; Mr A. A. Hagart Speirs; Mr John Stewart; Colonel Robert W. Walker; Mr John Duthie Webster. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

The Late Duke of Richmond and Gordon, K.G.

Before proceeding with the business of the Meeting, the CHAIRMAN referred with deep regret to the lamented death of the President of the Society, The Duke of Richmond and Gordon. His Grace, he said, occupied the Presidential Chair on the occasion of the two preceding Shows at Aberdeen in 1908 and 1920, and they had looked forward with pleasure to his presiding at the Show this year. The loss which the Society had sustained was a very real one, as His Grace was not only one of the largest and most highly respected landowners in Scotland, but was a man who commanded the esteem and regard of all sections of the community. He took a deep interest in the public life of the country, and rendered valuable services on many public bodies. The Society was honoured by his acceptance of the office of President, and his death was a loss to the Society and the country, which they deeply deplored.

A resolution of regret and sympathy was submitted and approved, the members present upstanding, and the Secretary was instructed to forward a copy to the family of the deceased.

The Late Earl Haig.

The CHAIRMAN also referred to the great loss the country had sustained through the death of Field-Marshal Earl Haig. He was not only a great soldier, but in many ways his life was an example to every one. He moved that a letter be forwarded to Lady Haig expressing their regret and deep sympathy in her sudden bereavement, and this was unanimously agreed to.

Science.

A Minute of Meeting of Science Committee, dated 1st February, was submitted and approved.

The Minute dealt with the following matters :—

Schedule of Unit Values.—The Schedule of Unit Prices of Manures and Feeding-Stuffs for the current year had been revised, and it was recommended that it be printed and issued as usual.

Values of Unexhausted Manures and Feeding-Stuffs.—It was recommended that the Table of Values of Unexhausted Manures and Feeding-Stuffs be re-issued, and that it be remitted to Dr Tocher, Consulting Chemist, to revise it in terms of the new Unit Values.

Aberdeen Show, 1928.

A Minute of Meeting of Shows Committee, dated 1st February, was submitted and approved.

The Minute dealt with the following matters :—

Shire Horse Classes.—Further correspondence with the Shire Horse Society had been submitted, and it was recommended that Classes and prize money be as follows :—

(1) Stallion or Colt, born before 1927	£20	£15	£10	£4
(2) Gelding, by a registered Shire Stallion, born before 1926	10	5	3	
(3) Yeld Mare or Filly, born before 1927	15	9	6	4
(4) Filly, Colt, or Gelding, born in 1927, bred in Scotland, by a registered Shire Stallion	8	5	3	

Of the total prize money of £117, £46, 16s. would be contributed by the Shire Horse Society, and £70, 4s. by this Society.

Suffolk Sheep.—In accordance with a representation from the Northern Area of the Suffolk Sheep Society, it was recommended that in future the President's Champion Medal be awarded for the best pen of Suffolk Sheep, instead of for the best individual sheep as formerly.

As Oxford Downs and Half-Breds have Classes for pens of three, it was recommended that this alteration apply to these breeds also.

Wool.—It was recommended that Classes be added for Oxford Down, Suffolk, and Dorset Horn Wool, with Classes and prize money corresponding to the other breeds—this giving a total increase of £36.

Rural Industries.—The SECRETARY reported that he had adjusted the Confined Classes in the Rural Industries Section with the North-Eastern Area of the S.W.R.I. This was approved by the Committee. The Secretary also submitted names of suggested Judges, and it was left to him to approach these and secure their acceptance of office.

Horse-Shoeing.—The SECRETARY reported that the local Branch of the Farriers' and Blacksmiths' Association desired a Horse-Shoeing Competition, and had agreed to undertake to find horses for the competition, and arrange for anvils, forges, and blowers. The class of Horses to be shod would be Farm Horses.

It was recommended that the following be appointed as a Committee of Management: *Highland and Agricultural Society*—Captain E. F. Lumsden of Balmadie; Colonel R. W. Walker, Portlethen; and Mr James Cruickshank, Cruden Bay. *Farriers' and Blacksmiths' Association*—Mr John Ritchie, Little Belmont Street, Aberdeen; Mr James Scott, Bucksburn, Aberdeen; and Mr George Crichton, Bridge of Dee, Aberdeen.

It was also recommended that the following be invited to act as Judges of Horse-Shoeing, along with the Society's Veterinary Surgeon: Mr George Littlejohn, Blacksmith, Protston Hill, Gamrie, Banff, and Mr Robert Hall, Blacksmith, Chryston, Glasgow.

Free Stands.—Free Stands and Free Sites at the Show were recommended to be granted, according to a list submitted.

Lady Members' Pavilion.—On the Motion of Mr N. H. CONSTABLE, seconded by Mr R. MACMILLAN, it was agreed to recommend that, in future, the Lady Members' Pavilion at the Show be reserved for the use of Lady Members, with this addition, that each Lady Member and each Director of the Society receive one ticket for a lady friend.

Draught Geldings.—Mr ALEXANDER MURDOCH, East Hallside, moved the following Motion, which appeared under his name on the agenda: "That the Classes for Draught Geldings be open only to those got by a registered Clydesdale Stallion." The Motion was seconded by Mr WILLIAM C. HUNTER of Arngask, and was unanimously agreed to.

Forage.—A Minute of Meeting of Forage Committee, dated 31st January, was read and approved.

The Minute stated that the Committee recommended the acceptance of the offer by the Forage Supply Co. Ltd., Leith, to supply forage for the Aberdeen Show.

Timber Contract.—A Minute of Meeting of Show Contracts Committee, dated 31st January, was read and approved.

The Minute recommended the acceptance of the Tender by Messrs George Gordon & Co. Ltd., Aberdeen, for the supply of Timber for the Aberdeen Show.

Stock Judging Competition.—A Minute of Meeting of Stock Judging Committee, dated 31st January, was read and approved.

The Minute stated that the Committee had revised the regulations for the Stock Judging Competition and that these would appear in the proof of the Prize List to be issued for consideration at next Meeting of the Board.

The principal changes suggested were as follows:—

That the Competition be held on Thursday, instead of Friday, of the Show week.

That the Competition for Teams be thrown open to Teams from Young Farmers' Clubs, as well as from the Agricultural Colleges in Scotland, but that a special additional prize be offered for the College Team placed highest in the Prize List.

That the Stock to be judged consist of eight Classes, namely: 3 Cattle Classes

—Shorthorn, Aberdeen-Angus, British Friesian; 2 Classes of Clydesdales; and 3 Classes of Sheep—Blackface, Border Leicester, and Cheviot.

On this occasion, the correct placing of the animals would not be determined by the Judges until the conclusion of the Competition. The Judge would, at the same time, give a short demonstration on the animals used in the Competition.

New Implements.—The following were appointed Judges of New Implements: Mr William Low of Balmakewan; Mr G. B. Shields, Rosebery Farm, Gorebridge; and Mr P. O. Turnbull, Smeaton, Dalkeith.

Special Prizes.—A number of Special Prizes were accepted, and votes of thanks accorded to the donors.

Commercial Cattle.

The Minute of Meeting of the Shows Committee also stated that Mr James M'Laren, Cornton, had submitted a proposed scheme for the encouragement of the breeding of good commercial cattle. The proposal in general was that the Society give Grants, according to a graduated scale, to purchasers of pure-bred bulls to be used for producing good cross-bred calves. The Committee recommended that the proposed scheme be remitted to the following Sub-Committee for consideration and report: Colonel F. J. Carruthers; Mr James Durno; Mr Alexander Forbes; Mr W. P. Gilmour; Mr J. E. Kerr; Mr James R. Lumsden; Mr G. B. Shields; and the Chairman, Honorary Secretary, and Treasurer, *ex officii*.

Proposed New Premises.

Dr T. G. NASMYTH moved the following Motion, of which notice had been given on the Agenda:—

“That a Committee be appointed to inquire into the possibility of acquiring more suitable premises for the Society, and to report.”

Dr Nasmyth said he thought every one was satisfied that the Society's present premises were unsatisfactory, both as regards site and accommodation. He understood a Committee had been appointed some years ago to look out for new premises, but, so far, they had had no success. At the present time there was more likelihood of obtaining suitable premises, as many large houses in Edinburgh were being converted into smaller houses and business premises.

Mr HARRY ARMOUR seconded the Motion, which was unanimously agreed to, and the following Committee was appointed: Colonel F. J. Carruthers; Mr William C. Hunter; Mr Alexander Murdoch; Dr T. G. Nasmyth; and the Chairman, Treasurer, and Honorary Secretary, *ex officii*.

Residual Values of Feeding-Stuffs and Fertilisers.

A letter was submitted from the Board of Agriculture for Scotland, forwarding copy of the Report by a Joint-Committee of Scientific and Professional men on the Residual Values of Feeding-Stuffs and Fertilisers.

World's Dairy Congress, 1928.

A communication was submitted from Colonel W. T. R. Houldsworth, Chairman of the Scottish Sub-Committee of the World's Dairy Congress to be held in June and July 1928. A copy of the Draft Programme of the Conference was also enclosed. Application was made by the Scottish Sub-Committee for a contribution towards the expenditure in connection with the Scottish part of the programme, and it was accordingly agreed to remit the matter to the Finance Committee for consideration and report.

Office of President.

It was unanimously agreed to invite the Marquess of Aberdeen and Temair, K.T., to accept the office of President of the Society for the current year, in place of the late Duke of Richmond and Gordon.

MEETING OF DIRECTORS, 29TH FEBRUARY 1928.

Mr JAMES M'LAREN, Cornton, Bridge of Allan, in the Chair.

Present.—Ordinary Directors—Mr Harry Armour; Mr Norman H. Constable; Mr James Durno; Mr John Elliot; Mr William Elliot; Mr George Grant; Mr Peter Grant; Mr William C. Hunter; Mr J. Ernest Kerr; Mr James M'Clean; Mr James M'Laren; Mr Robert Macmillan; Mr James M'Queen; Dr T. G. Nasmyth; Mr Alexander Niven; Mr John W. Prentice; Mr Alfred H. Reid; Hon. Walter T. H. Scott; Mr Phipps O. Turnbull. *Extraordinary Directors*—Mr William Anderson; Colonel F. J. Carruthers; Mr James Cruickshank; Mr Alexander Forbes; Captain William S. Grant; Mr James R. Lumsden; Mr Alexander Murdoch; Bailie William Poole, J.P.; Major Robert W. Sharpe; Mr G. Bertram Shields; Mr A. A. Hagart Speirs; Colonel Robert W. Walker. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Consulting Engineer*—Professor R. Stanfield.

The late Brig.-General Sir Walter Charteris Ross, K.B.E., C.B.

At the commencement of the Meeting, the CHAIRMAN referred to the loss the Society had sustained through the death of Brig.-General Sir Walter Charteris Ross, K.B.E., C.B., of Cromarty, who had been a Director of the Society from 1920 to 1924. He had, he said, a long and distinguished career as a soldier in the service of his country, in the course of which he earned high honours. He took a keen interest in public affairs in the north, and was highly esteemed by the agricultural community of Ross and Cromarty.

A resolution of regret and sympathy was submitted and approved, the members present upstanding, and the Secretary was instructed to forward a copy to Lady Ross and the family of the deceased.

The late Mr Robert C. Young, Netherfield.

The CHAIRMAN also referred, with deep regret, to the death of Mr Robert C. Young, Netherfield. Mr Young, he said, was an agriculturist of outstanding ability, and, as such, commanded the respect and regard of farmers and others throughout the west of Scotland. He served on many public bodies, and was a member of that Board for a period of four years, during which time his work as a Director was highly appreciated.

A resolution of regret and sympathy was submitted and approved, the members present upstanding, and the Secretary was instructed to forward a copy to the widow and family of the deceased.

Licensing of Bulls.

A letter was submitted from the Hon. Secretary of the Joint-Committee of the Scottish Shorthorn Breeders, asking the Society to support the following representation which had been made by the Joint-Committee to the Ministry of Agriculture and Fisheries and the Board of Agriculture for Scotland:—

“The Joint-Committee of Scottish Shorthorn Breeders desires to direct the attention of the Ministry of Agriculture and Fisheries, and the Board of Agriculture for Scotland, to the fact that in many parts of the country there still continues to be bred a low grade of commercial cattle which are quite unfit to produce either milk on a paying basis, or beef of sufficient quality to compete with chilled foreign meat. The Committee recognises that some improvement has been effected under the existing system of premium bulls, but being strongly of opinion that the time has come for bringing more drastic measures into force, the Committee urges that the necessary Parliamentary powers should be obtained to institute a system of compulsory Government licence, similar to those now in force in Ireland. The Committee recognises that the attainment of a high standard must be gradual, and that in view of the existing agricultural depression, a beginning ought to be made by excluding from licence only bulls of an obviously undesirable type. While impressed with the undoubted advantage of using pure-bred bulls of a recognised breed, the Committee especially desires to dis-

sociate itself from any attempt to restrict, in the immediate future, the issue of licences to bulls registered in the Herd-Book of any one of the Breed Societies."

On the Motion of Mr WILLIAM C. HUNTER of Arngask, seconded by Colonel F. J. CARRUTHERS of Dormont, it was agreed to support the representation of the Joint-Committee of Scottish Shorthorn Breeders.

Rowett Research Institute.

A letter was read from the Rowett Research Institute, Aberdeen, making application for a grant towards the establishment of an experimental stock farm in connection with the Institute. It was agreed to remit the letter to the Finance Committee for consideration and report.

Aberdeen Show, 1928.

Proof of Prize List.—A proof print of the Prize List and Regulations was submitted, and, after one or two slight emendations had been made, was approved for publication.

Rabbits.—The SECRETARY reported that, after consultation with Mr J. E. Kerr of Harviestoun, he had invited Mr Allan Watson, Bradford, to act as Judge of Rabbits, and he had accepted the invitation.

Rural Industries.—The SECRETARY reported that he had secured the acceptance of the following as Judges in the Rural Industries Section: Mr George M. Russell, Inch; Miss Bruce, Edinburgh; Mr J. Mountford, Edinburgh; Miss Chart, Edinburgh; Miss M. Jack, Aberdeen.

Horse-Shoeing.—The SECRETARY also reported that the Judges and additional members of Committee, nominated at last Meeting, had agreed to accept office.

Catering.—A Minute of Meeting of Catering Committee, dated 29th February, was submitted and approved.

The Minute recommended that there be four licensed catering stands in the Showyard, these to be in the hands of the following caterers: Royal Athenæum, Aberdeen; Messrs Alexander Fairley & Sons, 83 Leith Street, Edinburgh; Messrs William & R. S. Kerr (Glasgow), Ltd., 272 St Vincent Street, Glasgow; and Messrs M. Mitchell & Co., Ltd., 2 Gloucester Place, Edinburgh. The tea stand would again be in the hands of Mr John Henderson, Aberdeen. The British Woman's Temperance Association would, as usual, have an unlicensed refreshment stand.

It was agreed that a condition be imposed on all the caterers that only home-fed meat shall be supplied in the catering stands.

Meteorological Demonstration.—A letter was read from the Board of Agriculture proposing that arrangements be made for a demonstration by the Meteorological Office, similar to that at the Edinburgh Show last year. It was agreed to approve of the proposed demonstration.

Bacon Pig Competition.—On an application by the Scottish National Pig Breeder's Association it was agreed to grant a free stand, as formerly, for a Bacon Pig Competition, and also to give a sum of £25 towards the expenses of the Competition.

Free Stands.—The following further grants of free stands were approved: Aberdeen Asylum for the Blind—20 feet; and Aberdeen Royal Mental Hospital—10 feet.

Special Prizes.—Several Special Prizes were accepted, and votes of thanks accorded to the donors.

Turnip Topping and Tailing Machines.

Bailie WILLIAM POOLE, J.P., suggested the desirability of offering medals for improved Turnip Topping and Tailing Machines, these to be exhibited at the Aberdeen Show, and a trial thereof held in the autumn. The SECRETARY stated that it was usual, when a trial of implements was in prospect, to give manufacturers considerably longer notice than would be possible were this proposal adopted.

It was eventually agreed that the matter be remitted to the Implement Committee for consideration and report.

Proposed Quarantine Station for Scotland.

A Minute of Meeting of Special Committee, dated 29th February, was submitted and approved.

The Minute stated that the Committee had continued their inquiries for a

suitable site for a Quarantine Station in Glasgow, and were now in negotiation with the London Midland & Scottish Railway Company for a site adjacent to the Princes Dock. The negotiations were being continued, as it was considered desirable to secure certain other premises which were adjacent to the ground in question. The Ministry of Agriculture had been communicated with regarding the proposed site, and had been furnished with a plan thereof, and their decision was awaited as to whether the site would meet with their approval.

Finance.

A Minute of Meeting of Finance Committee, dated 29th February, was submitted and approved.

The Minute dealt with the following matters :—

World's Dairy Congress, 1928.—The Committee recommended that a contribution of Twenty-Five Guineas be made towards the expenditure in connection with the Scottish part of the programme of the World's Dairy Congress, to be held in June and July 1928. It was further recommended that the following representatives of the Society be nominated as delegates to the Congress : Sir David Wilson, Bart. ; Sir Hugh Shaw Stewart, Bart. ; the Hon. T. G. P. Corbett ; Mr Alexander Munro ; Mr W. P. Gilmour ; and Mr John W. Prentice.

International Congress of Entomology.—It was agreed to recommend that Dr R. Stewart MacDougall be appointed to represent the Society at the Fourth International Congress of Entomology to be held at Cornell University, Ithaca, New York, in August 1928, and that a contribution of Twenty-five Guineas be paid towards his expenses.

Proposed New Premises.

A Minute of Meeting of Special Committee, dated 28th February, was submitted.

The Minute stated that the Committee had made numerous inquiries as to the possibility of securing new premises for the Society in various parts of the city, and, in particular, had visited and inspected two houses in Charlotte Square, and one in Eglinton Crescent.

They were unanimously of opinion that the premises at 8 Eglinton Crescent were suitable in respect of accommodation for the Society's Offices and for Meetings of the Board of Directors and also for General Meetings of the Society, unless on exceptional occasions. The assessed rent of the house was £200, and feu-duty £29. It could be purchased for £4000.

The Committee desired the views of the Board of Directors as to its suitability in respect of situation and convenience of access. Particulars were given as to the distance from Princes Street and the various railway stations, and the position of the house was shown on a plan of the city which was exhibited.

After full consideration and discussion, it was unanimously agreed, on the Motion of Mr WILLIAM C. HUNTER, seconded by Dr T. G. NASMYTH, to proceed with the purchase of the house at the figure mentioned—£4000. It was further agreed to remit to the same Committee to deal with any questions which may arise in connection with the purchase, the date of occupation, and the disposal of the Society's present Chambers.

PROCEEDINGS AT GENERAL MEETINGS.

GENERAL MEETING, 1st JUNE 1927.

Sir RALPH ANSTRUTHER of Balcaskie, Bart., in the Chair.

New Members.

One hundred and ninety-three candidates were balloted for and admitted members of the Society.

Election of Office-Bearers.

The following noblemen and gentlemen were elected office-bearers of the Society for the year 1927-28 :—

President.—The Duke of Richmond and Gordon, K.G., Gordon Castle, Fochabers.

Vice-Presidents.—The Marquess of Aberdeen and Temair, K.T., House of Cromar, Tarland ; The Earl of Southesk, Kinnaird Castle, Brechin ; Lord Provost Andrew Lewis, 11 Queen's Road, Aberdeen ; Falconer L. Wallace of Candacraig and Balcairn, Strathdon.

Ordinary Directors, 1924.—Mr William Low of Balmakewan, Lauronckirk ; Mr J. Ernest Kerr of Harviestoun, Dollar ; Mr Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive ; Mr Alexander P. Gordon of Bindal, Portmahomack ; Mr William S. Niven, The Loan, Errol ; Mr William Elliot, Muirglen, Lanark ; Mr John Elliot, Balnakiel, Galashiels ; Mr Harry Armour, J.P., Niddry Mains, Winchburgh.

1925.—Mr James M'Laren, Cornton, Stirling ; Mr W. P. Gilmour, Balmangan, Kirkcudbright ; Mr Peter Grant, Mains, Advie, Morayshire ; Mr William C. Hunter of Arngask, Glenfarg ; The Hon. T. G. P. Corbett, Rowallan, Kilmarnock ; Mr Athole S. Hay of Marlefield, Roxburgh ; Dr Thomas G. Nasymth, Canaan Lodge, 43 Canaan Lane, Edinburgh ; Mr Alfred H. Reid, Hillhead, Ellon.

1926.—Mr James M'Queen of Crofts, Dalbeattie ; Mr Alexander Munro of Leanach, Culloden Moor, Inverness ; Mr Alexander Niven of Collairnie, Ladybank ; Mr Norman H. Constable, Bute Estate Office, Rothesay ; Mr Gilbert Davidson, Burnfoot, Hawick ; Mr Phipps O. Turnbull, Smeaton, Dalkeith ; Mr James Durno, Crichtie, Inverurie ; Brig.-General Archibald Stirling of Keir, Dunblane.

1927.—Lieut.-Colonel Thomas W. Cuthbert, C.M.G., D.S.O., Achindunie, Alness ; Mr William Meiklem, Bennoch Park, Kirkcaldy ; Sir Thomas Paxton, Bart., LL.D., 22-28 Adelphi Street, Glasgow ; Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick ; Sir James Inglis Davidson, Saughton Mains, Corstorphine ; Mr George Grant, Glenfarclas, Blackboat ; Mr John W. Prentice, Craigrie Farm, Clackmannan ; Mr James M'Clean, Craigmount, Portpatrick.

Extraordinary Directors.—Colonel F. J. Carruthers of Dormont, Lockerbie ; Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire ; Mr John Stewart of Struthers, J.P., Woodburne House, Ceres, Fife ; Mr G. Bertram Shields, Dolphinstone, Tranent ; Mr Alexander Forbes, Rettie, Banff ; The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline ; Major Robert W. Sharpe of The Park, Earlston ; Bailie William Poole, J.P., Englewood, Blackhall ; Mr A. A. Hagart Speirs of Elderslie, Houston House, Houston ; Mr James R. Lumsden of Arden, Dumbartonshire ; Mr William Anderson, Saphock, Oldmeldrum ; Mr David R. Arnot, Mains of Edzell, Edzell ; Bailie James C. Booth of Downiehill, Peterhead ; Mr James Cruickshank, Kilmarnock Arms, Cruden Bay ; Captain

William Smith Grant, Minmore, Glenlivet; Captain E. F. Lumsden of Balmedie, Aberdeen; Mr William Reith, Kennerty, 46 Rose Street, Aberdeen; Colonel Robert W. Walker, Portlethen, Aberdeen; Mr John Duthie Webster, The Bank, Tarves; Mr Walter Wilson, Inchgower, Buckie.

Treasurer.—Sir David Wilson, Bart., D.Sc., of Carbeth, Killearn.

Honorary Secretary.—Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip.

Special Grants.

Colonel F. J. CARRUTHERS, Chairman of Directors, moved approval of the following Special Grants, which were recommended by the Board of Directors.

(1) £1000 towards the endowment of a Department of Research in Animal Breeding in the University of Edinburgh.

(2) £200, for the current year, to the Animal Diseases Research Association.

(3) £100, for the current year, to the Scottish National Milk and Health Association.

Mr W. P. GILMOUR, Balmangan, seconded, and the grants were unanimously approved.

Edinburgh Show.

Mr G. B. SHIELDS, Convener of the Shows Committee, reported as follows: I have to report that the arrangements for the forthcoming Show at Edinburgh, on 26th July and three following days, are making satisfactory progress. The work on the Showyard erections is well advanced. The site provided by the Corporation of Edinburgh in Saughton Park is level and ample in extent, although there are certain features of the ground which render an entirely satisfactory lay-out somewhat difficult.

The entries in the section for Implements, Machinery, and other exhibits, which have now closed, are unusually large, over 9800 feet (frontage) having been applied for. This is 2300 feet more than last year. Entries of Stock are coming in well, and a large entry appears probable. Entries at ordinary fees close to-morrow.

While the Show, in general, will follow the usual lines, there are one or two points which are worthy of mention. Increased prizes are offered for Horse Jumping, and a large entry is expected. Single judging will be in general operation, for the first time, at this Society's Shows. The Stock Judging Competition is a new feature, and it is anticipated will attract much interest. There is a special Competition for Ranges and Grates suitable for rural cottages.

There appears to be every prospect that, given good weather, the Show, as an exhibition, should prove a distinct success. It must be borne in mind, however, that Saughton Park is not so ideally situated as the Meadows, and the date fixed may not prove to be so suitable as an earlier date for securing a large attendance of the general public.

Aberdeen Show, 1928.

Mr WILLIAM LOW of Balmakewan reported that the arrangements for the Aberdeen Show in 1928 were proceeding satisfactorily. The Town Council of Aberdeen had placed an extended portion of the Links at the disposal of the Society as a site for the Show, and had expressed their willingness to do everything in their power to make the Show a success.

Show of 1929.

Mr JAMES M'LAREN, Cornton, reported that, as a result of an inspection of the King's Park, Stirling, it was found that sufficient space was not now available for the holding of the Show. A considerable portion of the former site was occupied by tennis courts and a putting course. A Committee had been appointed to ascertain if any other suitable site were available in the Stirling Show Division for the Show of 1929. That Committee had not yet completed its investigations.

Agricultural Education.

Colonel F. J. CARRUTHERS, Convener of the Education Committee, reported as follows: I have to submit the following report on the Examination held at Leeds in April last for the National Diploma in Agriculture. 142 candidates presented themselves for examination, 1 on commission. 43 candidates were from Scotland. As a result of the Examination, 49 Diplomas were awarded, 2 with Honours. Of the 142 candidates, 4 appeared for all the subjects, and of these 2 passed, 1 with Honours. 68 had passed certain subjects previously, and were completing the Examination this year, and of these 47 obtained the Diploma. The remaining

70 presented themselves for groups of three, four, or five subjects, and of these 33 passed in the subjects for which they appeared, and are entitled to appear for the remaining subjects in 1928.

Report by Chemist.

Dr J. F. TOCHER, Consulting Chemist to the Society, submitted a Report on the work done in his department during the past half year.

The substance of Dr Tocher's Report appears on pp. 189-201 of this volume.

In reply to an observation by Dr R. Cunningham Affleck, to the effect that a fertiliser might show a very good chemical analysis, and yet its effect might not be good as regards the crop, and the stock which consumed the crop, the Chairman said it was not the analyst's business to tell the results of what the fertiliser did, but the components of the fertiliser. The Society, as well as County Committees and private individuals, had tried experiments for many years, and the gradual amount of learning accumulating on the subject was very large. Dr Affleck could not do better for the Society and agriculture than to give his experience on the subject, because the more experience they had of fertilisers and the way in which they acted on the soil, the better would it be for the country in general, and for the individuals who depended on the crops for a living.

Dr CUNNINGHAM AFFLECK also referred to the part of the Report in which the use of iron instead of lead piping for conveying water from the source of supply to the dwelling-house was recommended. He said he had had considerable opportunities of investigating water supplies to farms, and he was astonished at the nature of the water and the pipes. The area was not infrequently polluted, and consequently the state of health of the inhabitants was much below what it ought to be.

The CHAIRMAN pointed out that it was a public health question what the actual position of the water supply was to be, and as to whether it was delivered in a way not injurious to health. If the water was available, the law was strong enough to ensure to the inhabitants a proper supply, because the Public Health Act was clear on the subject, and large sums of money were spent on supplying good water to the public, greatly to their advantage.

Proposed Quarantine Station for Scotland.

Colonel F. J. CARRUTHERS, Chairman of Directors, submitted a statement with regard to the proposal to establish a Quarantine Station in Scotland. The substance of his remarks is contained in the Minute of Meeting of Directors of same date.

After some discussion, the action which the Directors proposed to take was unanimously approved.

Vote of Thanks to Chairman.

Colonel F. J. CARRUTHERS moved a cordial vote of thanks to Sir Ralph Anstruther, Bart., for presiding at the Meeting. He said Sir Ralph was Chairman of the Board of Directors twenty-five years ago, and he had been closely connected with the management of the Society for a great many years.

GENERAL MEETING OF MEMBERS HELD IN THE SHOWYARD,
EDINBURGH, 27TH JULY 1927.

The Right Hon. The EARL OF WEMYSS AND MARCH, President of the Society, in the chair.

The CHAIRMAN said they did him the high honour of electing him their President, and he took that opportunity of congratulating them and their Directors on the success of the Show, which, whether judged by the quality of its exhibits, by the wide appeal to general interest, by its business character, or by the perfection of the organisation down to the smallest detail, made it a model of what a great agricultural Show ought to be. He noticed that the Directors had decided to go in for single judging. Time would prove the wisdom of this, but he did see in it a distinct advantage to the disappointed exhibitor, because, after the Show, when he met the man he thought had deprived him of a prize to which he was entitled, he would be able to deal with him more effectively and more surely

than when there were several judges. In that he would have a great advantage. His Lordship added that he admired the pluck and enterprise of the Society in starting single judging, because he saw that in the prize-fighting ring and at football matches referees were asking for increased protection. It interested him to know that they were meeting on what used to be a golf course. He was an ardent golfer, but he could not help noticing that many places which used to be farm land were now occupied as golf links. He was glad on this occasion to see a change, and that on a place where a few months ago golfers were duffing their drives and missing their approaches, the most splendid specimens of the animal kingdom were being paraded in triumph. He hoped it would be the first step in the turn of the tide, because, to use a golfing metaphor, agriculture was at the present moment economically badly bunkered, and it would require the agricultural equivalent of Bobby Jones to get them out of it.

Coming up to the north from the south, where he had been living, and where relentless weather had irretrievably damaged crops that were never too abundant, where storms of hail and rain had actually swept root crops out of the ground, it was a pleasure to see in the Lothians the natural fertility of the soil brought to the highest productive results by the skill, enterprise, and capital of good farming. But what were the gifts of nature? What was the use of skill, art, and capital in man if the costs of production exceeded the market value of what was produced? That was their unfortunate position. He was not there that day to suggest a remedy. There were plenty of people all over the country now who were recommending remedies to the agriculturists. He knew of one village where three separate agricultural doctors came in one week to tell the agriculturists how they ought to conduct their business. His Lordship said he hoped and believed that all agriculturists—farm workers, farmers, and owners—would combine together more than they had done in the past; that they would determine that, whatever their politics might be, they should be agriculturists first, and that they would not allow agriculture to be made the sport of politics or the ladder by which politicians should climb into office. Was it not possible to form a large agricultural association, composed of all who were interested in agriculture, whose object would be, not merely to denounce the Government of the day, whoever it might be, still less to try to force Protection upon an industrial people—that at the present moment, at all events, was impossible—but to put agriculture first, to determine to see that, whatever party was in office, agriculture should have fair play. They must do what they could to co-operate. The South African farmers had been speaking on the previous night about how they co-operated together, and how the agriculturists in this country did not co-operate, and how they felt that co-operation was the great thing needed. They wanted to see what they could do to eliminate the unfair profits of the middlemen, and they wanted to develop and make their markets. It might be too optimistic to hope that that could be achieved rapidly, but at all events any step towards it would be a step in the right direction. Major Elliot, M.P., Under Secretary of State for Scotland, had said on the previous night that he thought the tide was on the turn, and that Scottish agriculture would improve. He wished he could share Major Elliot's optimism, but at present he did not see where it came from. But this he did feel, that farming in Scotland and Great Britain had always had its ups and downs—bad cycles succeeded by prosperity; and this he did say, that never in the history of Scottish farming had Scottish farmers greater opportunities for education, and never had they availed themselves so freely of them as they were doing now. In old times they muddled through, but this time they were working through. All that science, education, and capital, all that industry could do, was being done by the farmers. When the tide at last turned they should have weathered the storms more successfully than in the past, and what was more important, they would be in a better position to enjoy the good results of prosperity. He only hoped that when his successor addressed them next year the tide would have turned, and they would be able to take full advantage of the prosperity they so richly deserved, and that agriculture might once more be a booming industry.

Votes of Thanks.

Colonel F. J. CARRUTHERS of Dormont, Chairman of Directors, moved: "That a cordial vote of thanks be accorded to Lord Provost Stevenson, the Magistrates and Council of the City of Edinburgh for the excellent site provided for the Show, and for their hearty co-operation and assistance in all matters tending to promote the success of the Show." They would remember, he said, that when it was first decided that the Show was to be in Edinburgh that year, they had hopes that they were going to get a site rather nearer the centre of the city than Saughton Park, and those hopes were strengthened by the goodwill of the majority of the

Town Council. Unfortunately it was found to be impossible to grant the site first suggested, but the Town Council offered them another site, and he thought they would agree it was a very good site indeed. In fact he thought he might say that if they could only move the site a little bit nearer the town it would be an ideal one. The Town Council, in addition to giving the ground, had provided the usual facilities in the way of water, and they also had given a great deal of help individually in making the arrangements for a successful Show. Indirectly they had taught the Society a lesson. Hitherto all the cooking in the showground had been done by gas. This year, owing to the very high cost in the City of Edinburgh, all the caterers had been obliged to get oil stoves, he understood, and no gas was being used. He thought that in future they would really benefit by that experience, because there were always difficulties if they got a site too far away from the gas mains. The Society thanked the Corporation for all they had done for them, and they were looking forward to favours to come when the 100th Show took place in 1931.

Sir HUGH SHAW STEWART of Greenock and Blackhall, Bart., in seconding, said they had all great confidence that their permanent staff, Mr Stirton and Professor Stanfield and assistants, would make the Show arrangements a success under any difficulties, but it must be a great advantage to them when they came to a new site to know that they had the co-operation and goodwill of the Corporation. This kind of help, which was so valuable, had been given to the Society from the start, and had never ceased since.

The vote of thanks was heartily accorded, and it was acknowledged by Bailie Dr Nasmyth, in the absence of Lord Provost Stevenson.

Colonel W. T. R. HOULDSWORTH of Kirkbride, Maybole, proposed a vote of thanks to Mr J. T. M'Laren, Convener, and members of the Local Committee, for the efficient and successful manner in which they had carried out the arrangements for the Show. One had only to look at the names of those who formed the Local Committee to see, he said, how thoroughly representative it was of the Edinburgh Show District. Of its Convener, Mr J. T. M'Laren, they in the Society learned fully to realise and appreciate his worth when he acted as Chairman of the Board of Directors. With such a Committee and with such a Convener, the smooth and successful working of the arrangements was, he thought, assured from the very outset. He was not aware that the Local Committee had been called upon to face and deal with any problems of unusual difficulty, and therefore perhaps they had not seen their high qualities put fully to the test, but he was quite sure had any difficult problem arisen they were fully competent to meet and successfully deal with it. He was sure the Society was deeply grateful to them.

Mr WILLIAM C. HUNTER of Arngask, in seconding, endorsed all that Colonel Houldsworth had said. Any one who was associated with the Committee felt that the Society had the very best services and co-operation from the members of the Local Committee.

Mr J. T. M'LAREN, The Leuchold, Dalmeny, in reply, said it was quite true that their duties were not exacting, but all the same it was very pleasant indeed to have the assurance that they committed no grievous error. As they were aware, the Local Committee was drawn from the various districts throughout the Edinburgh area—a thoroughly representative Committee—and included in it they had Convener Duncan and other members of the Town Council of Edinburgh. He would like on his own behalf to tender to all the individual members of the Local Committee his special thanks for their co-operation and the hearty support they had given him as Convener. Reference had been made to the great Centenary Show, which they were hoping would be held in this area. He would like to say as a parting word to Convener Duncan, that he thought he might be usefully employed if he would apply his mind to secure for the Highland and Agricultural Society a permanent site for their Show. He thought it was not very creditable to the City of Edinburgh that they should not have a permanent site, not only for the Highland Society but for kindred associations. He hoped that Convener Duncan would take that into his serious consideration, and use his influence with the Corporation.

Major MARK SPROT of Riddell moved that the Society express its appreciation of the complete and satisfactory arrangements which the railway companies had made for the expeditious transport of both stock and implements connected with the Show. He was sure they would agree that on all sides they had heard great praise of the railway arrangements, and he personally had no grumbles.

Mr G. BERTRAM SHIELDS, Dolphingstone, Tranent, in seconding, said that as Convener of the Shows Committee he had heard no serious complaint from any one, either owners of stock or exhibitors of implements. Some small things had gone amissing, but when they looked around and saw the amount of traffic handled and brought there by the railway companies, the surprising thing was that there

was no serious complaint, and he thought it reflected great credit on the railway companies.

Major C. H. Stemp, L.N.E. Railway, said he need hardly say, on behalf of his own company and on behalf of the L.M.S. Company, how much they appreciated what had been said in connection with the railway arrangements. He did not think it was fully realised what an amount of special organisation was necessary to deal with a Show of such proportions as that of the Highland and Agricultural Society. Every detail had to be thought out beforehand, and the necessary vehicles provided for both incoming and outgoing traffic. Furthermore, they had to supply special waggons and employ a special staff to deal with the traffic. According to accounts, the farmers were losing money. So were the railway companies losing money on all hands, and when he heard people speaking of railway rates he would like to refer to the unfair competition of the road transport. They could not do without the railways. Heavy traffic must be carried by them, but much of the best traffic had been diverted to the road transport, not because of the want of service, but because of the lower rates. The railways were taxed up to the hilt. He would ask traders to have a little patience with the railway companies. They could not always do the right thing, but they endeavoured to do it, and perhaps the public would extend to them their tolerance.

Mr A. A. HAGART SPEIRS of Elderslie moved: That the Society express its gratitude to the Earl of Wemyss and March for coming there that day, for his services in the chair, and for the excellent manner in which he had carried through all the business. Their thanks were due to him for his interest in the Society and in the Show.

The EARL OF WEMYSS AND MARCH, in reply, said he could only thank the members most heartily, and assure them that to be President of the Society was one of the proudest events in his life.

ANNIVERSARY GENERAL MEETING, 4TH JANUARY 1928.

Mr FALCONER L. WALLACE of Candacraig and Balcairn, Strathdon, *Vice-President*, in the Chair.

New Members.

Four hundred and twenty candidates for election were balloted for and admitted Members of the Society.

Vacancy on Board of Directors.

Mr JAMES M'LAREN, Cornton, Bridge of Allan, Chairman of Directors, moved the following recommendation of the Board of Directors: That Mr J. P. Ross Taylor, Mungoswalls, Duns, be elected an Ordinary Director of the Society for the Border Show Division, to fill the vacancy caused by the death of the late Mr Gilbert Davidson.

The Motion was unanimously adopted.

Finance.

Sir DAVID WILSON of Carbeth, Bart., Convener of the Finance Committee, submitted the accounts of the Society for the year to 30th November 1927, and moved their approval. The receipts for the year from all sources reached a total of £30,167, 12s. This sum exceeded the outlays by £2865, 7s. 8d. Annual subscriptions amounted to £2389, 18s. 6d., and life subscriptions to £934, 10s. In the past year the expenditure on educational work amounted to £276, 17s. 11d.; on the work in the chemical and veterinary departments, £469, 8s. 4d.; on the Society's 'Transactions,' £2009, 1s.; a special grant of £1000 was given to the Animal Breeding Research Department, University of Edinburgh, and other special grants amounting to £400; premiums and medals for local Shows and district competitions, £607, 10s. 6d.; and for certificates and medals for long service, £160, 18s. 1d.

He moved approval of a grant of £100 for the current year to the Scottish Agricultural Organisation Society, £20 towards the cost of an investigation into the dentition of the pig, and £10 to the Society for the Prevention of Cruelty to Animals.

Mr JAMES R. LUMSDEN of Arden, Dumbartonshire, seconded, and the accounts and grants were approved.

Argyll Naval Fund.

Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, submitted the report on the Argyll Naval Fund for 1926-27, which showed that the income for the year amounted to £336, 1s., while the expenditure was £324, 9s., comprising grants to eight naval cadets amounting to £300, and cost of advertising, £24, 9s.

Edinburgh Show, 1927.

Mr G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, reported on the Show held at Edinburgh on 26th July and three following days. For substance of the Report, see p. 258 of this volume.

Aberdeen Show, 1928.

Mr WILLIAM C. HUNTER of Arngask, Glenfarg, reported as follows: Arrangements are well forward for the Show to be held this year at Aberdeen. The date of the Show has been fixed for 24th to 27th July inclusive. As previously reported, the Town Council of Aberdeen have placed The Links at the disposal of the Society as a free site for the Show. The area available has been extended to about forty acres, and, in addition, a space of four acres has been set aside as a motor-car enclosure. The Town Council are carrying out extensive levelling operations on the ground, and in that and other directions have evinced the greatest readiness to do everything in their power to secure the success of the Show.

The Prizo List, which is at present in course of preparation, will be on a liberal scale, the amount to be offered in prizes from the Society's own funds reaching a total of £3599, 5s., compared with £2923, 10s. at the last Aberdeen Show in 1920. In addition, there are the usual large number of valuable challenge cups, medals, and special prizes, besides prize money contributed by Breed Societies and private donors.

Show of 1929.

Mr JAMES M'LAREN reported as follows: The Committee charged with looking out for a suitable site in the Stirling Show Division have visited and inspected sites in Stirling and Bridge of Allan. The space now available in King's Park, Stirling, is not adequate for the holding of the Show. A site was inspected at Bridge of Allan and considered to be suitable, and the railway company was approached as to whether facilities for the handling of the Show traffic could be given at Bridge of Allan station. Unfortunately, the railway company has now replied that there are difficulties in the way of handling the traffic at Bridge of Allan which appear to be insuperable. The Committee are accordingly proceeding with their search for a suitable site in the Stirling Show Division.

Show of 1930.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, moved the following resolution, which had been that day adopted by the Board of Directors: "That provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1930 be held in the Dumfries Show Division."

Mr THOMAS STOBO of Kilroy, Auldgirth, Dumfries, seconded, and the Motion was duly adopted.

Grants to Local Societies.

Mr ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire, submitted the report on District Shows and Competitions, showing that, in 1927, grants of money and medals had been given in 72 districts. The total expenditure under this head amounted to £841, 10s. 4d. For the current year the Directors proposed the following grants: 16 districts for grants of £12 each for cattle, horses, and sheep, and 10 districts in intermediate years, with a grant of three silver medals to each; 6 districts for grants of £15 each for stallions; 3 districts for grants of £3 each; special grants of £10 each to eleven Federations of Scottish Women's Rural Institutes; £20 to Kilmarnock Cheese Show; £15 to Northern Arts and Crafts Society; a gold medal and silver medal to the British Dairymaids' Association; three silver medals for the Sir John Fleming Cup stackyard competition; 7 districts for two medals each; £8 and eight silver medals to Scottish National Union of Allotment Holders; 1 district for two medals for cottages and gardens;

long service certificates and medals, say £231, 5s.; and the usual medals for ploughing and hoeing competitions, say £125, 10s., making the total sum offered in 1928 £354, 13s. 6d.

Education.

Colonel F. J. CARRUTHERS, Convener of the Education Committee, reported on the results of the thirty-second examination held last autumn for the National Diploma in Dairying. At the examination in England there were 76 candidates, of whom 51 obtained the diploma and 25 failed; at the examination in Kilmarnock there were 47 candidates, 27 obtaining the diploma and 20 failing. No Diploma with Honours was awarded at either centre. The names of the successful candidates, as well as the names of the winners of the National Diploma in Agriculture at the examination held last April, will be published in the next volume of 'Transactions.'

The examinations for these diplomas will again be held during the ensuing year.

The Society's examination for First and Second Class Certificates in Forestry will be held here this year on 13th, 14th, and 15th March, provided a sufficient number of candidates present themselves for examination.

Science.

Report by Chemist.

Dr J. F. TOCHER, Consulting Chemist to the Society, reported on the work of the department during the year 1927.

The substance of Dr Tocher's report appears on pp. 189-201 of this volume.

Vote of Thanks.

Mr JAMES M'LAREN moved a hearty vote of thanks to Mr Falconer L. Wallace for presiding at the Meeting.

The Chairman, in acknowledging the vote of thanks, said he hoped the Society would have a very successful Show at Aberdeen.

APPENDIX

PREMIUMS

OFFERED BY

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND IN 1928

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GENERAL NOTICE.

THE HIGHLAND SOCIETY was instituted in the year 1784, and incorporated by Royal Charter in 1787. Its operation was at first limited to matters connected with the improvement of the Highlands of Scotland; but the supervision of certain departments, proper to that part of the country, having been subsequently committed to special Boards of Management, several of the earlier objects contemplated by the Society were abandoned, while the progress of agriculture led to the adoption of others of a more general character. The exertions of the Society were thus early extended to the whole of Scotland, and have since been continuously directed to the promotion of the science and practice of agriculture in all its branches.

In accordance with this more enlarged sphere of action, the original title of the Society was altered, under a Royal Charter, in 1834, to **THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND**.

Among the more important measures which have been effected by the Society are—

1. Agricultural Meetings and General Shows of Stock, Implements, &c., held in the principal towns of Scotland, at which exhibitors from all parts of the United Kingdom are allowed to compete.

2. A system of District Shows instituted for the purpose of improving the breeds of Stock most suitable for different parts of the country, and of aiding and directing the efforts of Local Agricultural Associations.

3. The encouragement of Agricultural Education, under powers conferred by a supplementary Royal Charter, granted in 1856, and authorising the Society to grant Diplomas to Students of Agriculture; and by giving grants in aid of education in Agriculture and allied sciences. In 1900 the Society discontinued its own Examination, and instituted jointly with the Royal Agricultural Society of England an Examination for a National Diploma in Agriculture.

4. The advancement of the Veterinary Art, by conferring Certificates on Students who have passed through a prescribed curriculum, and who are found, by public examination, qualified to practise. Terminated in 1881 in accordance with arrangements with the Royal College of Veterinary Surgeons.

5. The institution of a National Examination in Dairying, jointly with the Royal Agricultural Society of England.

6. The institution of an Examination in Forestry for First and Second Class Certificates.

7. The appointment of a chemist for the purpose of promoting the application of science to agriculture.

8. The establishment of a Botanical Department.

9. The appointment of Entomologist to advise members regarding insect pests.

10. The annual publication of the 'Transactions,' comprehending papers by selected writers, Prize Reports, and reports of experiments, also an abstract of the business at Board and General Meetings, and other communications.

11. The management of a fund left by John, 6th Duke of Argyll (the original President of the Society), to assist young natives of the Highlands who enter His Majesty's Navy.

CONSTITUTION AND MANAGEMENT.

The general business of **THE HIGHLAND AND AGRICULTURAL SOCIETY** is conducted under the sanction and control of the Royal Charters, referred to above, which authorise the enactment of Bye-Laws.

The Office-Bearers consist of a President, Four Vice-Presidents, Thirty-two Ordinary and Twenty Extraordinary Directors, a Treasurer, an Honorary and an Acting Secretary, an Auditor, and other Officers.

The Supplementary Charter of 1856 provides for the appointment of a Council on Education, consisting of Sixteen Members—Nine nominated by the Charter, and Seven elected by the Society.

PRIVILEGES OF MEMBERS

MEMBERS OF THE SOCIETY ARE ENTITLED—

1. *To receive a free copy of the 'Transactions' annually.*
2. *To apply for District Premiums that may be offered.*
3. *To report Ploughing Matches for Medals that may be offered.*
4. *To Free Admission to the Shows of the Society.*
5. *To exhibit Live Stock and Implements at reduced rates.¹*
6. *To have Manures and Feeding-Stuffs analysed at reduced fees.*
7. *To have Seeds tested at reduced fees.*
8. *To have Insect Pests and Diseases affecting Farm Crops inquired into.*
9. *To attend and vote at General Meetings of the Society.*
10. *To vote for the Election of Directors, &c., &c.*

ANALYSIS OF MANURES AND FEEDING-STUFFS

The Fees of the Society's Chemist for Analyses made for Members of the Society shall, until further notice, be as follows:—

This scale of fees applies only to Members whose subscriptions are not in arrears.

The determination of one ingredient in a single sample of manure or of a feeding-stuff . 5s.

The determination of two or more ingredients in a single sample of manure or of a feeding-stuff 10s.

These charges apply only to analyses made for agricultural purposes for the sole and private use of Members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

The Society's Chemist, if requested, also supplies valuations of manures, according to the Society's scale of units.

SEEDS, CROP DISEASES, INSECT PESTS, &c.

The rates of charges for the examination of plants and seeds, crop diseases, insect pests, &c., will be had on application to the Secretary.

ELECTION OF MEMBERS

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June. It is not necessary that the proposer should attend the Meeting.

CONDITIONS OF MEMBERSHIP

Higher Subscription.—The ordinary annual subscription is £1, 3s. 6d., and the ordinary subscription for life-membership is £12, 12s.; or after ten annual payments have been made, £7, 7s.

Lower Subscription.—Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, and such other persons as, in respect of their official or other connection with Agriculture, the Board of Directors may consider eligible, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £7, 7s., and after eight annual payments of 10s. have been made, a Life Subscription may be purchased for £5, 5s., and after twelve such payments, for £3, 3s.² Subscriptions are payable on election, and afterwards annually in January.

According to the Charter, a Member who shall not have objected to his election, on the same being intimated to him by the Secretary, cannot retire until he has paid, in annual subscriptions or otherwise, an amount equivalent to a life composition.

Members are requested to send to the Secretary the names and addresses of Candidates they have to propose (stating whether the Candidates should be on the £1, 3s. 6d. or 10s. list).

JOHN STIRTON, *Secretary.*

3 GEORGE IV. BRIDGE, EDINBURGH.

¹ Firms are not admitted as Members; but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.

² Candidates claiming to be on the 10s. list must state under which of the above designations they are entitled to be placed.

ESTABLISHMENT FOR 1927-1928.

President.

THE MARQUESS OF ABERDEEN AND TEMAIR, K.T., House of Cromar,
Tarland.

Vice-Presidents.

THE EARL OF SOUTHBESK, Kinnaird Castle, Brechin.
LORD PROVOST ANDREW LEWIS, 11 Queen's Road, Aberdeen.
FALCONER L. WALLACE of Candacraig and Balcairn, Strathdon.

Year of
Election.

Ordinary Directors.

- | | | |
|------|---|--|
| 1924 | { | WILLIAM LOW of Balmakewan, Laurencekirk. |
| | | J. ERNEST KERR of Harviestoun, Dollar. |
| | | ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive. |
| | | ALEXANDER P. GORDON of Bindal, Portmahomack. |
| | | WILLIAM S. NIVEN, The Loan, Errol. |
| | | WILLIAM ELLIOT, Muirglen, Lanark. |
| 1925 | { | JOHN ELLIOT, Balnakiel, Galashiels. |
| | | HARRY ARMOUR, J.P., Niddry Mains, Winchburgh. |
| | | JAMES M'LAREN, Cornton, Bridge of Allan. |
| | | W. P. GILMOUR, Balmangan, Kirkeudbright. |
| | | PETER GRANT, Mains, Advie, Morayshire. |
| | | WILLIAM C. HUNTER of Arngask, Glenfarg. |
| | | THE HON. T. G. P. CORBETT, Rowallan, Kilmarnock. |
| | | ATHOLE S. HAY of Marlefield, Roxburgh. |
| 1926 | { | DR THOMAS G. NASMYTH, Canaan Lodge, 43 Canaan Lane, Edinburgh. |
| | | ALFRED H. REID, Hillhead, Ellon. |
| | | JAMES M'QUEEN of Crofts, Dalbeattie. |
| | | ALEXANDER MUNRO of Leanach, Culloden Moor, Inverness. |
| | | ALEXANDER NIVEN of Collairnie, Ladybank. |
| | | NORMAN H. CONSTABLE, Bute Estate Office, Rothesay. |
| | | J. P. ROSS TAYLOR, Mungoswalls, Duns. (Elected 4th January 1928.) |
| | | PHIPPS O. TURNBULL, Smeaton, Dalkeith. |
| | | JAMES DURN, Crichtie, Inverurie. |
| | | Brig.-General ARCHIBALD STIRLING of Keir, Dunblane. |
| 1927 | { | Lieut.-Col. THOMAS W. CUTHBERT, C.M.G., D.S.O., Achindunie,
Alness. |
| | | WILLIAM MEIKLEM, Bennochy Park, Kirkcaldy. |
| | | Sir THOMAS PAXTON, Bart., LL.D., 22-28 Adelphi Street, Glasgow. |
| | | THE HON. WALTER T. H. SCOTT, Master of Polwarth, Harden,
Hawick. |
| | | Sir JAMES INGLIS DAVIDSON, Saughton Mains, Corstorphine. |
| | | GEORGE GRANT, Glenfarclas, Blackboat. |
| | | JOHN W. PRENTICE, Craigrie Farm, Clackmannan. |
| | | JAMES M'CLEAN, Craigmount, Portpatrick. |

Extraordinary Directors.

- 1926 { Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
 ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.
 JOHN STEWART of Struthers, J.P., Woodburne House, Ceres, Fife.
 G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.
 ALEXANDER FORBES, Rettie, Bauff.
 The EARL OF ELGIN AND KINCARDINE, C.M.G., Broomhall,
 Dunfermline.
- 1927 { Major ROBERT W. SHARPE of The Park, Earlston.
 Bailie WILLIAM POOLE, J.P., Englewood, Blackhall.
 A. A. HAGART SPEIRS of Elderslie, Houston House, Houston.
 JAMES R. LUMSDEN of Arden, Dumbartonshire.

Show District.

- 1927 { WILLIAM ANDERSON, Saphock, Old Meldrum.
 DAVID R. ARNOT, Mains of Edzell, Edzell.
 Bailie JAMES C. BOOTH of Downiehills, Peterhead.
 JAMES CRUICKSHANK, Kilmarnock Arms, Cruden Bay.
 Captain WILLIAM SMITH GRANT, Minmore, Glenlivet.
 Captain E. F. LUMSDEN of Balmedie, Aberdeen.
 WILLIAM REITH, Kennerty, 46 Rose Street, Aberdeen.
 Colonel ROBERT W. WALKER, Portlethen, Aberdeen.
 JOHN DUTHIE WEBSTER, The Bank, Tarves.
 (WALTER WILSON, Inchgower, Buckie.

Office-Bearers.

Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, *Treasurer*.
 Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, *Honorary Secretary*.
 The Very Rev. CHARLES L. WARR, M.A., 63 Northumberland Street, Edinburgh, *Chaplain*.
 JOHN STIRTON, *Secretary*.
 J. G. YARDLEY, *Chief Clerk*.
 R. C. TODD, *Second Clerk*.
 *Auditor*.
 J. F. TOOHER, D.Sc., F.I.C., 41½ Union Street, Aberdeen, *Chemist*.
 Professor R. STANFIELD, A.R.S.M., M.Inst.C.E., F.R.S.E., 24 Mayfield Gardens, *Consulting Engineer*.
 R. S. MACDOUGALL, M.A., D.Sc., 9 Dryden Place, *Consulting Entomologist*.
 TODD, MURRAY, & JAMIESON, W.S., 66 Queen Street, *Law Agents*.
 WILLIAM BLACKWOOD & SONS LTD., 45 George Street, *Publishers*.
 HENRY MUNRO, LTD., 82 Mitchell Street, Glasgow, *Advertising Agents*.
 HAMILTON & INCHES, Princes Street, *Silversmiths*.
 ALEXANDER KIRKWOOD & SON, 9 St James' Square, *Medallists*.
 JOHN REID, 55 Blenheim Place, Aberdeen, *Showyard Erector*.
 ANDREW BROWN, *Messenger*.

Chairman of Board of Directors.

JAMES M'LAREN, Cornton, Bridge of Allan.

Chairmen of Committees.

1. *Argyll Naval Fund* . . . MACLACHLAN OF MACLACHLAN, Castle Lachlan, Strachur.
2. *Finance, Chambers, and Law* Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn.
3. *Publications* . . . Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
4. *Shops* . . . ALEXANDER FORBES, Rettie, Banff.
5. *Implements and Machinery* PHIPPS O. TURNBULL, Smeaton, Dalkeith.
6. *Science* . . . Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn.
7. *General Purposes* . . . JAMES M'LAREN, Cornton, Bridge of Allan.
8. *Education* . . . Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
9. *Forestry* . . . Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip.
10. *Office-Bearers* . . . JAMES M'LAREN, Cornton, Bridge of Allan.

COMMITTEES FOR 1927-1928.

1. ARGYLL NAVAL FUND.

MACLACHLAN OF MACLACHLAN, Castle Lachlan, Strachur, *Convener*.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie.

The EARL OF ELGIN AND KINCARDINE, C.M.G., Broomhall, Dunfermline.

Colonel Sir JOHN GILMOUR, Bart., M.P., D.S.O., of Montrave, Leven.

Sir KENNETH MACKENZIE of Gairloch, Bart., Conan House, Conon Bridge, Ross-shire.

Brig.-General ARCHIBALD STIRLING of Keir, Dunblane.

JAMES M'LAREN, Cornton, Bridge of Allan, Chairman, *ex officio*.

Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.

Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Hon. Secretary, *ex officio*.

2. FINANCE, CHAMBERS, AND LAW.

Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *Convener*.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie.

Sir JAMES INGLIS DAVIDSON, Saughton Mains, Corstorphine.

The EARL OF ELGIN AND KINCARDINE, C.M.G., Broomhall, Dunfermline.

JOHN ELLIOT, Balnakiel, Galashiels.

WILLIAM C. HUNTER of Arngask, Glenfarg.

J. ERNEST KERR of Harviestoun, Dollar.

JAMES R. LUMSDEN of Arden, Dumbartonshire.

JAMES M'LAREN, Cornton, Bridge of Allan.

ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.

JAMES M'QUEEN of Crofts, Dalbeattie.
 ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.
 G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.
 PHIPPS O. TURNBULL, Smeaton, Dalkeith.
 Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Hon.
 Secretary, *ex officio*.
 Auditor, *ex officio*.

3. PUBLICATIONS.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, *Convener*.
 HARRY ARMOUR, J.P., Niddry Mains, Winchburgh.
 NORMAN H. CONSTABLE, Bute Estate Office, Rothesay.
 JAMES DURN, Crichtie, Inverurie.
 ALEXANDER FORBES, Rettie, Banff.
 ATHOLE S. HAY of Marlefield, Roxburgh.
 WILLIAM LOW of Balmakewan, Laurencekirk.
 ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
 ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.
 Dr THOMAS G. NASMYTH, Canaan Lodge, 43 Canaan Lane, Edinburgh.
 The Hon. WALTER T. H. SCOTT, Master of Polwarth, Harden, Hawick.
 G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.
 Brig.-General ARCHIBALD STIRLING of Keir, Dunblane.
 PHIPPS O. TURNBULL, Smeaton, Dalkeith.
 JAMES M'LAREN, Cornton, Bridge of Allan, Chairman, *ex officio*.
 Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.
 Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Hon.
 Secretary, *ex officio*.

4. SHOWS.

ALEXANDER FORBES, Rettie, Banff, *Convener*.
 JAMES LUMSDEN of Arden, Dumbartonshire, *Vice-Convener*.
 WILLIAM ANDERSON, Saphock, Old Meldrum.
 HARRY ARMOUR, J.P., Niddry Mains, Winchburgh.
 DAVID R. ARNOT, Mains of Edzell, Edzell.
 Bailie JAMES C. BOOTH of Downiehill, Peterhead.
 Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
 NORMAN H. CONSTABLE, Bute Estate Office, Rothesay.
 The Hon. T. G. P. CORBETT, Rowallan, Kilmarnock.
 JAMES CRUICKSHANK, Kilmarnock Arms, Cruden Bay.
 Lieut.-Col. THOMAS W. CUTHBERT, C.M.G., D.S.O., Auchindunie, AIness.
 Sir JAMES INGLIS DAVIDSON, Saughton Mains, Corstorphine.
 JAMES DURN, Crichtie, Inverurie.
 The EARL OF ELGIN AND KINCARDINE, C.M.G., Broomhall, Dunfermline.
 JOHN ELLIOT, Balnakiell, Galashiels.
 WILLIAM ELLIOT, Muirglen, Lanark.
 W. P. GILMOUR, Balmangan, Kirkcudbright.
 ALEXANDER P. GORDON of Bindal, Portmahomack.
 GEORGE GRANT, Glenfarclas, Blacksoat.
 PETER GRANT, Mains, Advie, Morayshire.
 Captain WILLIAM SMITH GRANT, Minmore, Glenlivet.
 ATHOLE S. HAY of Marlefield, Roxburgh.
 WILLIAM C. HUNTER of Arngask, Glenfarg.
 J. ERNEST KERR of Harviestoun, Dollar.
 WILLIAM LOW of Balmakewan, Laurencekirk.
 Captain E. F. LUMSDEN of Balmedie, Aberdeen.
 JAMES M'CLEAN, Craigmount, Portpatrick.
 JAMES M'LAREN, Cornton, Bridge of Allan.

ROBERT MACMILLAN of Holm of Dalquhairn, Woodlee, Moniaive.
 JAMES M'QUEEN of Crofts, Dalbeattie.
 WILLIAM MEIKLEM, Bennochy Park, Kirkcaldy.
 ALEXANDER MUNRO of Leanach, Culloden Moor, Inverness.
 ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.
 DR THOMAS G. NASMYTH, Canaan Lodge, 43 Canaan Lane, Edinburgh.
 ALEXANDER NIVEN of Collairnie, Ladybank.
 WILLIAM S. NIVEN, The Loan, Errol.
 SIR THOMAS PAXTON, Bart., LL.D., 22-28 Adelphi Street, Glasgow.
 BAILIE WILLIAM POOLE, J.P., Englewood, Blackhall.
 JOHN W. PRENTICE, Craigrie Farm, Clackmannan.
 ALFRED H. REID, Hillhead, Ellon.
 WILLIAM REITH, Kennerty, 46 Rose Street, Aberdeen.
 THE HON. WALTER T. H. SCOTT, Master of Polwarth, Harden, Hawick.
 MAJOR ROBERT W. SHARPE of The Park, Earlstoun.
 G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.
 A. A. HAGART SPIERS of Elderslie, Houston House, Houston.
 JOHN STEWART of Struthers, J.P., Woodburne House, Ceres, Fife.
 BRIG.-GENERAL ARCHIBALD STIRLING of Keir, Dunblane.
 J. P. ROSS TAYLOR, Mungoswalls, Duns.
 PHIPPS O. TURNBULL, Smeaton, Dalkeith.
 COLONEL ROBERT W. WALKER, Portlethen, Aberdeen.
 JOHN DUTHIE WEBSTER, The Bank, Tayres.
 WALTER WILSON, Inchgower, Buckie.
 SIR DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.
 SIR HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Hon.
 Secretary, *ex officio*.
 PROFESSOR R. STANFIELD, 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio*.

5. IMPLEMENTS AND MACHINERY.

WILLIAM LOW of Balmakewan, Laurencekirk, *Convener*.
 BAILIE WILLIAM POOLE, J.P., Englewood, Blackhall, *Vice-Convener*.
 HARRY ARMOUR, J.P., Niddry Mains, Winchburgh.
 COLONEL F. J. CARRUTHERS of Dormont, Lockerbie.
 NORMAN H. CONSTABLE, Bute Estate Office, Rothesay.
 ALEXANDER FORBES, Rettie, Banff.
 W. P. GILMOUR, Balmangan, Kirkeudbright.
 JAMES M'LAREN, Corneton, Bridge of Allan.
 WILLIAM MEIKLEM, Bennochy Park, Kirkcaldy.
 WILLIAM S. NIVEN, The Loan, Errol.
 JOHN W. PRENTICE, Craigrie Farm, Clackmannan.
 ALFRED H. REID, Hillhead, Ellon.
 THE HON. WALTER T. H. SCOTT, Master of Polwarth, Harden, Hawick.
 MAJOR ROBERT W. SHARPE of The Park, Earlstoun.
 G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.
 JOHN STEWART of Struthers, J.P., Woodburne House, Ceres, Fife.
 PHIPPS O. TURNBULL, Smeaton, Dalkeith.
 COLONEL ROBERT W. WALKER, Portlethen, Aberdeen.
 SIR DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.
 SIR HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Hon.
 Secretary, *ex officio*.
 PROFESSOR STANFIELD, 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio*.

6. SCIENCE.

SIR DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *Convener*.
 ALEXANDER FORBES, Rettie, Banff, *Vice-Convener*.
 HARRY ARMOUR, J.P., Niddry Mains, Winchburgh.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
 The Hon. T. G. P. CORBETT, Rowallan, Kilmarnock.
 JAMES CRUICKSHANK, Kilmarnock Arms, Cruden Bay.
 Sir JAMES INGLIS DAVIDSON, Saughton Mains, Corstorphine.
 JAMES DUROO, Crichtie, Inverurie.
 The EARL OF ELGIN AND KINCARDINE, C.M.G., Broomhall, Dunfermline.
 WILLIAM ELLIOT, Muirglen, Lanark.
 W. P. GILMOUR, Balmangan, Kirkcudbright.
 PETER GRANT, Mains, Advie, Morayshire.
 ATHOLE S. HAY of Marlefield, Roxburgh.
 WILLIAM C. HUNTER of Arngask, Glenfarg.
 J. ERNEST KERR of Harviestoun, Dollar.
 WILLIAM LOW of Balmakewan, Laurencekirk.
 JAMES R. LUMSDEN of Arden, Dumbartonshire.
 JAMES M'CLEAN, Craigmount, Portpatrick.
 JAMES M'LAREN, Cornton, Bridge of Allan.
 ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
 JAMES M'QUEEN of Crofts, Dalbeattie.
 ALEXANDER MUNRO of Leanach, Culloden Moor, Inverness.
 ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.
 Dr THOMAS G. NASMYTH, Canaan Lodge, 43 Canaan Lane, Edinburgh.
 ALFRED H. REID, Hillhead, Ellon.
 Major ROBERT W. SHARPE of The Park, Earlstoun.
 G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.
 A. A. HAGART SPEIRS of Elderslie, Houston House, Houston.
 JOHN STEWART of Struthers, J.P., Woodburne House, Ceres, Fife.
 Brig.-General ARCHIBALD STIRLING of Keir, Dunblane.
 PHIPPS O. TURNBULL, Smeaton, Dalkeith.
 Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Hon.
 Secretary, *ex officio*.
 Dr J. F. TOCHER, 41½ Union Street, Aberdeen, Chemist, *ex officio*.
 R. S. MACDOUGALL, M.A., D.Sc., 9 Dryden Place, Edinburgh, Zoologist,
ex officio.

7. GENERAL PURPOSES.

JAMES M'LAREN, Cornton, Bridge of Allan, Chairman, *Convener*.
 HARRY ARMOUR, J.P., Niddry Mains, Winchburgh.
 Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
 Sir JAMES INGLIS DAVIDSON, Saughton Mains, Corstorphine.
 JOHN ELLIOT, Balnakiell, Galashiels.
 WILLIAM ELLIOT, Muirglen, Lanark.
 WILLIAM C. HUNTER of Arngask, Glenfarg.
 ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
 JAMES M'QUEEN of Crofts, Dalbeattie.
 ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.
 Dr THOMAS G. NASMYTH, Canaan Lodge, 43 Canaan Lane, Edinburgh.
 Bailie WILLIAM POOLE, J.P., Englewood, Blackhall.
 G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.
 PHIPPS O. TURNBULL, Smeaton, Dalkeith.
 Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.
 Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Hon.
 Secretary, *ex officio*.

8. EDUCATION.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, *Convener*.
 JAMES M'LAREN, Cornton, Bridge of Allan.
 G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.
 Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip.
 Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn.
 JOHN STIRTON, *Secretary*, Highland and Agricultural Society.

9. FORESTRY.

Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Hon. Secretary, *Convener*.

The DUKE OF ATHOLL, K.T., G.C.V.O., C.B., D.S.O., Blair Castle, Blair-Atholl.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie.

Sir JAMES INGLIS DAVIDSON, Saughton Mains, Corstorphine.

The EARL OF ELGIN AND KINCARDINE, C.M.G., Broomhall, Dunfermline.

Sir JOHN R. FINDLAY of Aberlour, 3 Rothesay Terrace, Edinburgh.

LORD FORTEVIOT, Dupplin Castle, Perth.

WALTER STEWART FOTHERINGHAM of Fotheringham and Murthly, Murthly Castle, Perth.

Colonel Sir JOHN GILMOUR, Bart., M.P., D.S.O., of Montrave, Leven.

The EARL OF HOME, Springhill, Coldstream.

J. H. MILNE HOME, Irvine House, Canonbie.

JAMES R. LUMSDEN of Arden, Dumbartonshire.

A. D. MACDONALD, Dundas Estate Office, South Queensferry.

Sir KENNETH MACKENZIE of Gairloch, Bart., Conan House, Conan Bridge, Ross-shire.

MACLAOHLAN OF MACLAOHLAN, Castle Lachlan, Strachur.

J. T. M'LAREN, The Leuchold, Dalmeny House, Edinburgh.

JAMES M'QUEEN of Crofts, Dalbeattie.

The Right Hon. Sir HERBERT E. MAXWELL of Monreith, Bart., Whauphill.

Sir JOHN MAXWELL STIRLING MAXWELL of Pollok, Bart., Pollok House, Pollokshaws.

LORD POLWARTH, Humble House, Upper Keith.

JAMES RODGER, Rochdale Lodge, Bridge of Allan.

A. A. HAGART SPEIRS of Elderslie, Houston House, Houston.

Major MARK SPROT of Riddell, Lilliesleaf.

The EARL OF STAIR, D.S.O., Lochinch, Castle Kennedy.

Brig.-General ARCHIBALD STIRLING of Keir, Dunblane.

JAMES M'LAREN, Cornton, Bridge of Allan, Chairman, *ex officio*.

Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.

10. OFFICE-BEARERS.

Constitution : (1) The four Ordinary Directors for the district in which the Show for the year is to be held (with the exception of one retiring next year); (2) one Ordinary Director from each of the other Show districts; and (3) the Chairman of the Board, Hon. Secretary, and Treasurer, *ex officio*.

Stirling . { JAMES M'LAREN, Cornton, Bridge of Allan.
Brig.-General ARCHIBALD STIRLING of Keir, Dunblane.
JOHN W. PRENTICE, Craigie Farm, Clackmannan.

Dumfries . JAMES M'QUEEN of Crofts, Dalbeattie.

Inverness . ALEXANDER MUNRO of Leanach, Culloden Moor, Inverness.

Perth . . WILLIAM C. HUNTER of Arngask, Glenfarg.

Glasgow . The Hon. T. G. P. CORBETT, Rowallan, Kilmarnock.

Borders . The Hon. WALTER T. H. SCOTT, Master of Polwarth, Harden, Hawick.

Edinburgh Dr THOMAS G. NASMYTH, Canaan Lodge, 43 Canaan Lane, Edinburgh.

Aberdeen . JAMES DUNNO, Crichtie, Inverurie.

Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.

Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip, Hon. Secretary, *ex officio*.

REPRESENTATIVES ON OTHER BODIES.**National Agricultural Examination Board.**

Colonel F. J. CARRUTHERS of Dormont, Lockerbie.

JAMES M'LAREN, Cornton, Bridge of Allan.

G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.

Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip.

Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn.

JOHN STIRTON, *Secretary*, Highland and Agricultural Society.

Edinburgh and East of Scotland College of Agriculture.

JOHN STIRTON, *Secretary*, Highland and Agricultural Society.

West of Scotland Agricultural College.

Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip.

Aberdeen and North of Scotland College of Agriculture.

Dr J. F. TOOHER, 41½ Union Street, Aberdeen.

Royal (Dick) Veterinary College.

Dr THOMAS G. NASMYTH, Canaan Lodge, 43 Canaan Lane, Edinburgh.

Glasgow Veterinary College.

ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.

Scottish Milk Records Association.

W. P. GILMOUR, Balmangan, Kirkeudbright.

ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.

Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan, Inverkip.

SCOTTISH PLANT REGISTRATION STATION.**Standing Committee of Management.**

Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn.

JAMES ELDER, Athelstaneford Mains, Drem.

G. BERTRAM SHIELDS, Rosebery Farm, Gorebridge, Mid-Lothian.

} *Appointed for*
5 years from 1st
January 1926.

Association for the Preservation of Rural Scotland.

ATHOLE S. HAY of Marlefield, Roxburgh.

MEETINGS.

General Meetings.—By the Charter the Society must hold two General Meetings each year, and, under ordinary circumstances, they are held in the months of January and June, in the Society's Hall, 3 George IV. Bridge, for the election of Members and other business. Twenty a quorum.

By a resolution of the General Meeting on 15th January 1879, a General Meeting of Members is held in the Showyard on the occasion of the Annual Show. This year it will be held at Aberdeen on the Wednesday of the Show, at an hour to be announced in the programme of the Show.

With reference to motions at General Meetings, Bye-Law No. 10 provides—"That at General Meetings of the Society no motion or proposal (except of mere form or courtesy) shall be submitted or entertained for immediate decision unless notice thereof has been given a week previously to the Board of Directors, without prejudice, however, to the competency of making such motion or proposal to the effect of its being remitted to the Directors for consideration, and thereafter being disposed of at a future General Meeting."

General Show at Aberdeen.—24th, 25th, 26th and 27th July.—Entries close for Implements, 7th May; Stock, Poultry, Dairy Produce, &c., 31st May; Rabbits and Honey, 21st June; Live Stock Judging Competition, 10th July.

Directors' Meetings.—The Board of Directors meet (except when otherwise arranged) on the first Wednesday of each month from November till June inclusive, at half-past one o'clock P.M., and occasionally as business may require, on a requisition by three Directors to the Secretary, or on intimation by him. Seven a quorum.

Committee Meetings.—Meetings of the various Committees are held as required.

Nomination of Directors.—Meetings of Members, for the purpose of nominating Directors to represent the Show Divisions on the Board for the year 1929-1930, will be held at the places and on the days after mentioned:—

- | | |
|---|---------------------------------|
| 1. Edinburgh, Market Buildings. Gorgie, | Wed., 30th Jan. 1929, at 1. |
| 2. Glasgow, North British Railway Hotel, | Wed., 13th Feb. 1929, at 1. |
| 3. Stirling, Golden Lion Hotel, | Thur., 14th Feb. 1929, at 1.30. |
| 4. Perth, Salutation Hotel, | Fri., 15th Feb. 1929, at 2. |
| <i>(In 1930 and 1931 the Meetings will be held at Cupar; in 1932 at Perth.)</i> | |
| 5. Border, Railway Hotel, St Boswells, | Thur., 21st Feb. 1929, at 1. |
| 6. Aberdeen, Imperial Hotel, | Fri., 1st Mar. 1929, at 2.30. |
| 7. Inverness, Station Hotel, | Tues., 5th Mar. 1929, at 2. |
| 8. Dumfries, King's Arms Hotel, | Wed., 13th Mar. 1929, at 2.15. |

The nomination of a Proprietor or other Member paying the higher subscription must be made in the 1st, 2nd, 4th, and 5th Divisions; and the nomination of a Tenant-Farmer or other Member paying the lower subscription, in the 3rd, 6th, 7th, and 8th Divisions.

Retiring Directors are not eligible for re-election until after the lapse of at least one year.

EXAMINATIONS.

Agriculture.—The Examination for 1928 for the National Diploma in Agriculture will be held at the University, Leeds, on Wednesday, 11th April 1928, and following days. Entries close on 20th February.

Dairying.—The Examination for 1928 for the National Diploma in Dairying will be held at the Dairy School, Kilmarnock: *Written*—On Thursday, Friday, and Saturday, 6th, 7th, and 8th September 1928; *Oral and Practical*—On Monday, 17th September 1928, and following days. Entries close on 4th August.

Forestry.—The Examination for the Society's Certificates in Forestry will be held at 3 George IV. Bridge, Edinburgh, in the month of March 1929.

AGRICULTURAL EDUCATION

By a Supplementary Charter under the Great Seal, granted in 1856, the Society is empowered to grant Diplomas.

From 1858 to 1899 the Society held an annual Examination for Certificate and Diploma in Agriculture. In 1872 the Free Life Membership of the Society was granted to winners of the Diploma. In 1884 permission was given to holders of the Diploma to append the letters F.H.A.S. to their names.

In 1898 it was resolved by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland to discontinue the independent Examinations in Agriculture held by the two Societies, and to institute in their stead a Joint-Examination for a NATIONAL DIPLOMA IN AGRICULTURE (N.D.A.) This Examination is now conducted under the management of the "National Agricultural Examination Board" appointed by the two Societies. In the year 1903, on the invitation of the two Societies, the Ministry of Agriculture and Fisheries and the Scottish Education Department agreed to appoint a representative from each to act on the Examination Board. Sir Daniel Hall, K.C.B., represents the former, and the late Sir John Struthers, K.C.B., represented the latter body up till 1921, and thereafter continued as a co-opted member of the Board till his death in 1925. In 1921 the Board of Agriculture for Scotland was invited to appoint a representative, and has since that date been represented by Sir Robert B. Greig, M.C., LL.D.

REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF AGRICULTURE

1. The Societies may hold conjointly, under the management of the National Agricultural Examination Board appointed by them, an Annual Examination in the Science and Practice of Agriculture, at a convenient centre.

2. Candidates who pass the Examination will receive the National Diploma in Agriculture—the Diploma to be distinguished shortly by the letters "N.D.A."

3. The Examination will be conducted by means of written papers and oral examinations.

4. In order to be eligible to sit for the Board's Examination in Agriculture, a candidate must—

(a) Present a certificate from a recognised Agricultural College that his attainments in the subjects of *General Botany, Geology, General Chemistry, Physics, and Mechanics*, as attested by class and other examinations, are, in the opinion of the authorities of the College, such as to justify his admission to the Board's Examination; or

(b) Produce evidence that he has passed the 1st B.Sc. or the Intermediate Examination in Science of a British University; or

(c) Present a Senior Certificate obtained at the Local Examinations of the Universities of Oxford or Cambridge, and produce evidence that he has continued his study of science for at least a year, and has

obtained a certificate in Subject 3 (a) Elementary Chemistry and Physics, (b) Botany of Group H of the Oxford Higher Local Examination, or in Subjects 1, Elementary Chemistry and Physics, and 4, Botany of Group E of the Cambridge Higher Local Examination ; or

(d) Present an Intermediate Leaving Certificate of the Scottish Education Department, and produce evidence that he has continued his studies for at least another year and has obtained the Higher Leaving Certificate in Science (including Chemistry and Botany).

5. In the case of students who satisfy the Board that they have not had the facilities for obtaining the foregoing certificates, the Board will be prepared to consider evidence of equivalent attainment. [Applications under this rule must be lodged *three months* before the date of the annual examination.]

6. *Before sitting for the PRACTICAL AGRICULTURE and FARM MACHINERY AND IMPLEMENTS papers, all candidates must produce evidence of possessing a practical knowledge of Agriculture obtained by residence on a farm for a period or periods (not more than two) covering a complete year of farming operations.*

7. Candidates will have the option of taking the whole of the following nine papers at one time, or of sitting for a group of any three, four, or five in the first year and the remaining subjects (at one examination) within the next two years :—

SUBJECT.	Maximum Marks.	Pass Marks.
1. Practical Agriculture (First Paper) . . .	400	240
2. Practical Agriculture (Second Paper) . . .	400	240
3. Farm Machinery and Implements . . .	300	150
4. Land Surveying and Farm Buildings . . .	100	50
5. Agricultural Chemistry . . .	200	100
6. Agricultural Botany . . .	200	100
7. Agricultural Book-keeping . . .	200	100
8. Agricultural Zoology . . .	100	50
9. Veterinary Science and Hygiene . . .	200	100
	2100	1130

NOTE.—Candidates taking the Examination in two Groups of subjects are recommended to take Agricultural Chemistry and Agricultural Botany in the first group.

8. A candidate who obtains not less than three-fourths (1575) of the aggregate maximum marks (2100) in the entire Examination will receive the Diploma with Honours, provided that he obtains not less than three-fourths (600) of the maximum marks (800) in the two Practical Agriculture papers.

9. Candidates electing to take the entire Examination at one time and failing in not more than three subjects may appear for these subjects in the following year. Failure in more than three subjects will be regarded as failure in the whole Examination.

10. In the case of candidates electing to take the Examination in two groups—

(a) A candidate appearing for a group of *three* subjects and failing in a single subject may, *in the case of a first group*, appear for that subject along with the second group, or, *in the case of a second group*, in the following year. Failure in more than one subject will be regarded as failure in the group.

(b) A candidate appearing for a group of *four* or more subjects and failing in not more than two subjects may, *in the case of a first group*, appear for these subjects along with the second group, or, *in the case of a second group*, in the following year. Failure in more than two subjects will be regarded as failure in the group.

11. Non-returnable fees must be paid by candidates as follows :—

Entire Examination	Six guineas.
Group of Subjects	Three guineas.
Reappearance for any Subjects	10/6 per Subject.

12. The Board reserve the right to postpone, abandon, or in any way, or at any time, modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

The Examination will take place at Leeds University on WEDNESDAY, 11th APRIL 1928, and following days.

Forms of application for permission to sit at the Examination may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C. 1," or from "The Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh," and must be returned duly filled up not later than MONDAY, 20th FEBRUARY 1928, when the Entries will close.

16 BEDFORD SQUARE, LONDON, W.C. 1,
December 1927.

SYLLABUS OF SUBJECTS OF EXAMINATION

PRACTICAL AGRICULTURE.

I.—FIRST PAPER.

1. *British Farming*.—Arable, stock-raising, dairying—Approximate areas covered by the different systems—Typical examples of each—Area in Great Britain under chief crops—Numbers of live stock—The recent history of agriculture—Short summary of agricultural returns.

2. *Climate*.—The effect of climate on farming practice—Rainfall—Temperature—Prevailing winds—Weather forecasts.

3. *Soils*.—The influence of geological formations on the systems of farming—Classification of soils—Character and composition—Suitability for cultivation—Reclamation—Drainage—Irrigation—Warping—Application of lime and marl—Bare fallows—Tillage—Subsoiling—Deep and thorough cultivation.

4. *Manures*.—The manures of the farm—The treatment of farmyard manure—The disposal of liquid manure and sewage—General manures—Special manures—Field trials of manures—The application of manures—Period of application and amounts used per acre—Unexhausted value of manures and feeding-stuffs.

5. *Crops*.—Wheat, barley, oats, rye, beans, peas, potatoes, turnips, swedes, mangolds, forage plants, hops, and other crops—Their adaptation to different soils and climates—Varieties—Selection of seed—Judging seeds—Cultivation, weeds and parasitic plants, best methods of prevention and eradication—Harvesting—Storing—Cost of production—Improvement of crops by selection and hybridising—Field trials—Methods which the farmer may adopt—Selection to resist disease—The principles of rotations—Rotations suitable for different soils and climates—Rotations and the maintenance of fertility—Green manuring—Leguminous crops in rotation—Catch crops—The advantages and disadvantages of rotations—Specialised farming—Management of Orchards.

II.—SECOND PAPER.

6. *Live Stock*.—The different breeds of British live stock—Their origin, characteristics, and comparative merits—Suitability for different districts—Breeding—General principles—Selection—Mating—Crossing—Rearing and general management—Breeding and rearing of horses, cattle, sheep, pigs, and poultry—Rearing colts and raising store stock—The foods of the farm—Their composition and suitability for different classes of stock—Purchased foods—Composition and special value—Rations for different kinds and ages of stock—Cost of producing beef, mutton, pork, and milk—Cost of feeding farm horses.

7. *The disposal of Crop, Produce, and Stock*.—Marketing grain and other crops—Sale of stock—Live weight—Dead weight.

8. *Milk*.—The production and treatment of milk—The manufacture of cheese, butter, &c.—The utilisation of by-products.

9. *Farming Capital*.—Calculations of the stocking and working of arable, stock, and dairy farms—Farm valuations—Rent and taxes.

10. *Labour*.—Organisation of labour—piece-work, time-work—labour costings.

11. *Renting a Farm*.—Indications of condition, productive power, and stock-carrying capacity—Leases—Conditions of occupancy.

N.B.—*It is essential that a candidate know his subject practically, and that he satisfy the Examiner of his familiarity with farm work and management.*

III.—FARM MACHINERY AND IMPLEMENTS.

1. *Power*.—The principle of action, construction, method of working, also care and management of steam engines and boilers, gas, oil and petrol engines and agricultural tractors—Cost and working expenses in connection with the above—Estimation of the brake horse-power of engines—Power derived from water—Measurement of the quantity of water flowing in a stream—General arrangement of water-power plants—Water-wheels—Turbines—Pumps, principle of action and construction—Flow of water through pipes—Hydraulic ram—Windmills.

2. *Agricultural Implements and Machinery*.—The mode of action and the general principles involved in the construction and working of farm implements and machinery—Arrangement of machinery with respect to the power plant—Pulleys and belting—Shafting and bearings—Lubrication—Lifting appliances—Strength and care of chains—Concrete and its use in the construction of simple foundations for engines and machines.

3. *Implements of Cultivation*.—Ploughs—Cultivators—Grubbers—Harrows—Drills—Manure Distributors—Seeding and planting implements.

4. *Implements of Harvesting*.—Mowing and Reaping machines—Rakes—Tedders—Elevators—Potato raisers.

5. *Implements of Transit*.—Carts, waggons, rick lifters, tractors.

6. *Threshing and Food-preparing Machinery*.—Threshing machines, stationary and portable—Screen Winnowers—Hummelers, Chaff cutters—Pulpers—Cake breakers.

7. *Dairy Appliances*.—Milking machines—Cream separators—Churns and other butter-working appliances—Milk delivery cans—Cheese-making utensils—Vats and presses.

N.B.—*Candidates are expected to have had some experience with agricultural machinery and implements under actual working conditions, and to be capable of illustrating their answers, when necessary, by intelligible sketches or diagrams.*

IV.—LAND SURVEYING AND FARM BUILDINGS.

1. The use and adjustment of instruments employed in Surveying and Levelling other than the Theodolite.

2. Land surveying by chain—Plotting from field book, and determination of areas surveyed—The simpler "field problems."

3. Levelling and plotting from field book.

4. A knowledge of the various classes of maps published by the Ordnance Survey Department and their Scales.

5. *Roads and Fences*.—The construction and maintenance of farm roads, fences, and ditches.

6. *Land Drainage*.—Methods of draining; mole and pipe drains; cost of construction and maintenance.

7. *Buildings*.—Buildings required on different classes of farms—Economic arrangement of farm buildings—Materials—Construction—Ventilation—Drainage—Water supply—Dimensions of dairy, stables, cow-sheds, yard, courts, and piggeries—Accommodation for power—Implement, machinery, and cart sheds—Hay and grain sheds—Shelter sheds—Storage of manure.

N.B.—*Each candidate should have with him at the Examination a pair of compasses, scales of equal parts, including scales of one chain to the inch, 4 feet to the inch, 8 feet to the inch, and the scale fitting the Ordnance map, 1100 or 25·344 inches to the mile, a small protractor, a set square, and a straight-edge about 18 inches in length.*

V.—AGRICULTURAL CHEMISTRY.

1. *The Atmosphere*.—Its composition and relations to plant and animal life.

2. *Water*.—Rain water—Soil water and drainage—Drinking water—Sewage and irrigation.

3. *The Soil*.—Origin, formation, and classification of soils—Sampling—Analysis—Composition of soils—The chemical and physical properties of soils—The water and air of the soil—Biological changes in the soil—The soil in relation to plant growth—Fertility—Causes of infertility—Improvement of soils.

4. *Manures*.—Theories of manuring—Classification of manures—Origin, nature, and characteristics of manures—Manufacture of manures—Composition, analysis, adulteration, and valuation of manures—Farmyard manure and other natural manures—Green-manuring—Liming, marling, claying—Artificial manures, their origin and manufacture—Fertilisers and Feeding Stuffs Act—Sampling of manures.

5. *Poisons, Antiseptics, and Preservatives*.—General chemical composition and character of insecticides, fungicides, antiseptics, and preservatives used on the farm.

6. *Plants and Crops*.—Constituents of plants—Assimilation and nutrition of plants—Sources of the nitrogen and other constituents of plants—Germination—Action of enzymes—Composition and manurial requirements of farm crops—Food products derived from crops—Manuring experiments.

7. *Animals*.—Composition of animal body—Animal nutrition—Digestion—Assimilation, metabolism, respiration, and excretion.

8. *Foods and Feeding*.—Constituents of foods—Origin, nature, and composition of chief feeding-stuffs—Sampling, analysis, and adulteration of foods—Nutritive value and digestibility of food—Functions of chief

food constituents—Energy values—Vitamines—Relation of foods to the production of work, meat, milk, and manure—Manurial residues of foods.

9. *Dairy Chemistry*.—The composition of milk, cream, butter, cheese, &c.—Conditions which influence the composition of milk and milk products—Action of ferments and enzymes on milk and milk products—Milk-testing—Analysis and adulteration of dairy products.

N.B.—*Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

VI.—AGRICULTURAL BOTANY.

In addition to a *general knowledge* of the morphology, histology, and physiology of plants, candidates will be expected to possess a *detailed knowledge* of the following subjects:—

British grasses of agricultural importance: recognition of, at any stage of growth. Habitats of important species. Constitution of the grass flora of good meadows and pastures. Composition of seed mixtures for temporary and permanent leys on various soils. The effects of artificial manures on the flora of grass land.

The weeds of arable and grass land. Poisonous and parasitic weeds. Methods of distribution by seed and vegetatively: of eradication. Weeds as soil indicators. Recognition of the seeds of the common weeds, particularly those characteristically found in clover, grass, &c., seed.

The chief varieties of wheat, barley, oats, clovers, roots, and other farm crops: their suitability for various climatic and soil conditions. The identification of the more important types of cereals by means of their grain characters. Characteristics of good and bad samples of cereals.

Identification of materials used in feeding cakes and meals.

Plant-breeding. Principles of heredity in plants. Pure lines. Fluctuating variability. Selection.

Disease in plants. Diseases due to the effects of parasitic fungi. Resistance to disease: conditions affecting. Fungoid diseases scheduled from time to time by the Ministry of Agriculture and Fisheries.

Yeasts and fermentation.

The general outlines of bacteriology: nitrogen fixation, nitrification, and denitrification. Putrefaction and the bacteriology of milk, butter, and cheese.

VII.—AGRICULTURAL BOOK-KEEPING.

1. Advantages of book-keeping to the farmer. Difficulties and how they can be overcome. Objects of book-keeping.

2. General principles of book-keeping. Double-entry system. Description and use of various books. Ledger, journal, cash-book, petty cash-book, day-books, &c. Entering transactions; posting; trial balance; closing the accounts. Single-entry system.

3. Special ledger accounts: Interest, depreciation, rent and rates, improvements, private and household expenses, profit and loss, and capital; partnership accounts.

4. Bank business. Opening a bank account. Use of cheques. Deposits and overdrafts.

5. General office work; correspondence, order notes, invoices, rendering accounts, receipts, &c. Filing systems.

6. Farm valuations for book-keeping purposes. Dates for stock-taking and principles of valuation. The farm balance-sheet.

7. Systems of farm book-keeping. Conditions that determine the most suitable system. Advantages and drawbacks of each system.

8. Accounts for the owner-occupier. Treatment of rent. Incidence of rates and tithe in England and Scotland, and their treatment as between farm and estate accounts. Improvements and upkeep and the general principles relating to maintenance claims.

9. Cost accounting. General principles and methods. Advantages, objects, difficulties.

10. Interpretation of results from ordinary and from cost accounts. Precautions necessary. Use of accounts as a guide to efficient management.

11. Income Tax. How the farmer is assessed. Preparation of Income Tax return. Treatment of Income Tax in accounts.

VIII.—AGRICULTURAL ZOOLOGY.

1. The part played by common animals in helping or hindering agricultural operations, as illustrated by moles and voles, insectivorous and other birds, snails and slugs, useful and injurious insects, arachnids and myriapods, earthworms, &c.

2. *General Structure of Insects*, especially the external characters.

3. *Life-history of Insects*.—Economic importance of different stages. A knowledge of the life-history of the principal insect pests as affording a basis for appropriate treatment.

4. *Acarina* injurious to Food Crops and Live Stock.

5. *Parasitic Worms*.—Flukes, Tapeworms, and Threadworms.

6. *Preventive and Remedial Measures* in regard to insects, acarines, and worm parasites—*e.g.*, farm practice in relation to the discouragement of insect attack. Encouragement of insect-eating birds and mammals. Artificial remedies. Insecticides. Treatment for parasites.

N.B.—*Practical acquaintance with common animals, especially insects and worm parasites, will be expected. Where the candidate is not acquainted with the scientific name of an animal, the generally received English name will be accepted.*

Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.

IX.—VETERINARY SCIENCE AND HYGIENE.

1. Elementary anatomy and physiology of the horse, ox, sheep, and pig, and their relation to unsoundness and disease.

2. The general principles of breeding—including the physiology of reproduction, the laws of heredity, the periods of gestation, and the signs of pregnancy in the mare, cow, ewe, and sow.

3. Dentition as a means of determining the age of horses, cattle, sheep, and swine.

4. The management of farm stock in health and disease.

The following won the Diploma in 1927 :—

Diploma with Honours.

- 1st. CECIL ELDRINGTON ELMS, Seale Hayne Agricultural College, Newton Abbot, and Reading University.
- 2nd. JOHN NORMAN SHARROCK, East Anglian Institute of Agriculture, Chelmsford.

Diploma.

- WILLIAM ROWAN ALEXANDER, West of Scotland Agricultural College, Glasgow.
- JAMES BAKER, University of Leeds.
- JOHN STEPHENSON BARRY, University of Leeds.
- JOHN ANDERSON BROWN, Midland Agricultural and Dairy College, Sutton Bonnington.
- JOHN ELGAR BULL, University of Leeds.
- WILLIAM KEITH BUTLER, Seale Hayne Agricultural College, Newton Abbot.
- ALBERT CARTWRIGHT CASTLE, University of Reading.
- PAUL CHADWICK, Seale Hayne Agricultural College.
- STANLEY ARTHUR CHILD, Seale Hayne Agricultural College.
- MARGARET ISABELLA CHRISTIAN, Glasgow University and West of Scotland Agricultural College.
- NORMAN DENNIS CLARKE, Midland Agricultural and Dairy College.
- ERIC MARK COOPER, University of Leeds.
- GEORGE SINCLAIR DUNNETT, Glasgow University and West of Scotland Agricultural College.
- JOHN GLEN, Glasgow University and West of Scotland Agricultural College.
- DAVID GOODFELLOW, West of Scotland Agricultural College.
- BRIAN JOSEPH HARTLEY, Midland Agricultural and Dairy College.
- WILLIAM BERNARD HUTCHINSON, Harper Adams Agricultural College, Newport, Salop.
- WILLIAM ARTHUR JONES, University College of Wales, Aberystwyth.
- CHARLES HUGH KIDSON, University of Leeds.
- CYRIL KINSEY, University College of Wales, Aberystwyth.
- ERIC KNOWLES, Seale Hayne Agricultural College.
- RONALD BELL LITTLE, University of Leeds.
- ROBERT GOODE M'CLYMONT, Glasgow University and West of Scotland Agricultural College.
- ARCHIBALD JAMES MACDONALD, Aberdeen University and North of Scotland College of Agriculture.
- THOMAS BLAIR MACDONALD, West of Scotland Agricultural College.
- JOSEPH GORDON MACNAUGHTAN, West of Scotland Agricultural College.
- JOHN DAVID STUART MARTIN, Edinburgh and East of Scotland College of Agriculture.
- ALEXANDER FLEMING MEIKLE, West of Scotland Agricultural College.
- CHARLES STEPHEN MILES, University of Reading.
- G. ERNEST MILLIGAN, West of Scotland Agricultural College.
- ALEXANDER GRAY MOWAT, Glasgow University and West of Scotland Agricultural College.

JOHN DYSON NUTT, University of Leeds.
EVAN GRIFFITH OWEN, University College of Wales, Aberystwyth.
JOHN PETRIE, Edinburgh and East of Scotland College of Agriculture.
JOHN LESLIE REES, University College of Wales, Aberystwyth.
LAUNCELOT RENNIE, West of Scotland Agricultural College.
ALBERT WILLIAM ROBINSON, University of Leeds.
HENRY CHARLES SMITH, Midland Agricultural and Dairy College.
JOHN NICHOLSON SMITH, University of Leeds.
PERCY WILLIAM SMITH, University of Reading.
ANDREW STRACHAN STENHOUSE, University of Aberdeen.
GEORGE REED STEPHENSON, University of Leeds.
NORMAN SYKES, University of Leeds.
MOLLY A. THOMSON, West of Scotland Agricultural College.
ARTHUR EDWIN TROTMAN, Harper Adams Agricultural College.
JOHN MITCHELL WARD, West of Scotland Agricultural College.
ROWLAND HARDING WYNNE, University College of North Wales,
Bangor.

EXAMINATION PAPERS OF PAST YEARS.

Copies of the Papers set at the Annual Examination for the National Diploma in the Science and Practice of Agriculture held in 1927 may be had upon application. Price 6d. per set.

VETERINARY DEPARTMENT

The Society established a Veterinary Department in 1823, but by an arrangement made with the Royal College of Veterinary Surgeons, the Society's examination ceased in 1881. Holders of the Society's Veterinary Certificate are entitled to become Members of the Royal College of Veterinary Surgeons on payment of certain fees, without being required to undergo any further examination. The number of Students who passed for the Society's Certificate is 1183.

The Society votes annually eleven silver medals for Class Competition to each of the two Veterinary Colleges in Scotland, the one in Edinburgh and the other in Glasgow.

FORESTRY DEPARTMENT.

The Society grants **FIRST and SECOND-CLASS CERTIFICATES** in FORESTRY.

1. An Examination will be held each year about the month of March.
2. The next Examination will be held at 3 George IV. Bridge, Edinburgh, in the month of March 1929, provided a sufficient number of candidates present themselves for examination.

Forms of application may be obtained from the Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh, and must be returned duly filled up on or before February 1929.

3. Candidates must possess—1. A thorough acquaintance with the theory and practice of Forestry. 2. A general knowledge of the following branches of study, so far as these apply to Forestry: (a) The Elements of Botany and Forest Zoology; (b) The Elements of Meteorology and Geology; (c) Forest Engineering, including Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to fencing, draining, bridging, road-making, and saw-mills; and Implements of Forestry; (d) Book-keeping and Accounts.

4. The Examinations are open to candidates of any age, may be both written and oral, and will include such practical tests as may from time to time be decided to apply.

5. The maximum number of marks for each subject is 100; Pass marks for First-Class Certificate—Forestry, 75; all other subjects, 60. Pass marks for Second-Class Certificate—Forestry, 60; all other subjects, 50.

6. A candidate who obtains Pass marks in certain subjects, but fails in others, may come up for these other subjects alone, it being understood that without the special permission of the Society no candidate will be eligible to enter for more than two subsequent Examinations.

7. A candidate who has obtained the Second-Class Certificate may enter again for the First-Class Certificate.

The list of students who obtained certificates prior to 1899 appears in the 'Transactions,' Fifth Series, vol. xi. (1899).

The following have since obtained First-Class Certificates:—

ERIC ARTHUR NOBBS, Department of Agriculture, Cape Town,	1899
GEORGE POTTS, Grey College, Bloemfontein, Orange River Colony,	1899
DUNCAN S. RABAGLIATI, 1 St Paul's Road, Bradford,	1901
FRANK SCOTT, Dumfries House Mains, Cumnock,	1903
WILLIAM T. STOCKLEY, Rose Villa, Garswood, near Wigan,	1906
A. FRANK WILSON, C.D.A. (Edin.), Reedieleys, Auchtermuchty,	1907
GEORGE FISHER, Farm Brook, Pilling, Garstang, Lancs.,	1909

JOHN PATTEN, jun., Hulne Park, Alnwick, ...	1909
ALEXANDER MITCHELL, Dalmeny Park, Edinburgh, ...	1909
JOHN D. DAVIDSON, Brimstage, Birkenhead, ...	1911
DONALD DOULL, M.A., A.R.C.Sc., High School, Kelso, ...	1911
JAMES W. MACKAY, Jervaulx Abbey, Middleham, Yorks., ...	1915
HARRY WATSON, Darnaway, Forres, ...	1915
REGINALD WATT HUNTER, 94 St George's Terrace, New-castle-on-Tyne, ...	1919
JOHN M'EWEN, Monaghty Forest, by Elgin	1922
ALFRED POPE, Swinsty Hall, Fewston, Harrogate	1922
WILLIAM LYNE WATT, Department of Agriculture, P.O. Box 323, Nairobi, Kenya Colony, Africa	1926

The following have since obtained Second-Class Certificates :—

WILLIAM BRUCE, B.Sc., East of Scotland College of Agriculture, Edinburgh, ...	1901
RAJAPPIER SWAMINATHAN, 56 Jesus Lane, Cambridge, ...	1901
THOMAS USHER, Courthill, Hawick, ...	1901
ALLAN CARRUTH, Lawmarnock, Kilbarchan, ...	1905
ALEX. M. LUMSDEN, Newburn Schoolhouse, Upper Largo, ...	1905
ROBERT M. WILSON, Laws Cottage, Duns, ...	1905
THOMAS CAMPBELL, Greystoke, Penrith, ...	1906
DONALD FERGUSON, Quarry Lane, Lennoxtown, ...	1906
CHARLES PENRHYN ACKERS, Huntly Manor, Gloucester, ...	1908
ROBERT HOWIE, Beechwood, Arbroath, ...	1908
JOHN TROTTER, D.Sc., 22 West Savile Terrace, Edinburgh, ...	1908
JAMES A. S. WATSON, Downieken, Dundee, ...	1908
NORMAN H. PEARSON, 52 Percy Park, Tynemouth, ...	1909
LIONEL F. STOBART, Royal Agricultural College, Cirencester, ...	1911
ALEXANDER GEORGE NORRIE, Cairnhill, by Turriff, ...	1913
WILLIAM WATT, Darnaway, Forres, ...	1913
WILLIAM P. GREENFIELD, 6 Littlefield Lane, Grimsby, ...	1915

SYLLABUS OF EXAMINATION.

I.—SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

I. Principles of Scientific Forestry.—1. The tree : conditions essential for its nutrition and growth. 2. The soil : its physical structure and properties. 3. The different forms of woodland crops. 4. Pure woods and mixed woods. 5. Even-aged and uneven-aged woods. 6. Sylvicultural characteristics of the principal trees, broad-leaved and coniferous, including recently introduced species of sylvicultural value.

II. Forest Organisation.—7. General ideas regarding the necessity for a national forest policy. 8. Conditions necessary for the formulation of a regulated system of forest management. 9. Working plans, their compilation, construction, and use.

III. *Practical Management of Forests*.—10. Assessment of the suitability of areas for afforestation purposes. 11. Preparation of areas for planting. 12. Treatment of heather, bracken, scrub. 13. Draining and enclosing. 14. Choice of species for various situations. 15. Seed—harvesting, extraction, storage. 16. Nurseries, temporary and permanent—choice of site, internal lay-out, management, including lifting, packing, and transport of plants. 17. Planting and sowing in the forest—methods suited to various conditions. 18. Natural regeneration by seed. 19. Regeneration by cuttings, layers, stool shoots. 20. Formation of mixed woods, even-aged, uneven-aged, temporary and permanent, use of nurse trees, kinds of nurse trees suitable under different conditions. 21. Tending of young woods. 22. Pruning. 23. Thinning.

IV. *Forest Protection against*—24. Fires, wind, snow, deer, rabbits, squirrels, birds, insects, and fungi.

V. *Timber*.—25. Its technical properties. 26. Its defects. 27. Recognition of different kinds of timber. 28. Processes for increasing its durability.

VI. *Utilisation of Produce*.—29. Uses of wood and other produce. 30. Felling. 31. Conversion. 32. Seasoning. 33. Transport. 34. Measurement, classification, valuation, and marketing of standing timber.

II.—FOREST BOTANY AND FOREST ZOOLOGY.

(a) FOREST BOTANY.

The fundamental facts of morphology, physiology, and classification of plants. The structure and function of the plant-cell and the plant-tissues. Their primary distribution. The secondary changes they exhibit in consequence of perennation.

The structure and function of the root and shoot in flowering-plants. Buds, their forms and uses. The flower. The fruit. The seed.

The structure and function of vegetative and reproductive organs of fungi.

Relationship of plants to air, soil, and water. Effect of light, heat, and mechanical agencies upon plants. Nutrition. The nature and elements of the food of plants. Sources of plant-food. The absorption, elaboration, transference, and storage of food. Respiration and transpiration. Parasites and saprophytes. Symbiosis.

Growth of plants in length and thickness. Correlation of growth, pruning. Germination of seeds. Formation of wood and bark. Healing of wounds.

Diseases of plants due to faulty nutrition and unfavourable circumstances of growth. Diseases due to attacks of fungi.

Natural reproduction and propagation by seeds and by buds. Fertilisation of flowers. Hybridisation. Artificial propagation by budding, grafting, layering, and cutting.

The characters of the large groups and classes of the vegetable kingdom. The characters of the families of plants which include the chief timber trees. The botanical characteristics of the principal British forest-trees (including the structural features of their wood). The weeds of the forest and their significance.

(b) FOREST ZOOLOGY.

General classification of animals. The differences between Vertebrates and Invertebrates.

Earthworms and their relation to soil formation; life-history and habits.

Snails and Slugs: General characters and habits.

Insects: Structure and metamorphosis. General classification; the orders of insects important in forestry. Habits and life-histories of important insects in the following groups: leaf-eaters, bark and stem borers, root feeders, sucking insects, predaceous and parasitic insects.

Insect Control: Natural control; preventive and remedial measures.

Spiders and Mites: General characters and habits.

Birds: Recognition and relation to forestry of crows, jay, woodpecker, hawks, owls and tits, also game birds.

Mammals: General characters of the main groups represented by the deer, rabbit, hedgehog, and weasel; the relation of these to forestry.

III.—METEOROLOGY AND GEOLOGY.***Meteorology.***

The atmosphere, its composition and physical properties. Measurement of pressure and temperature. The barometer. Rain, hail, snow, fog, cloud, dew, the dew-point, hoar frost. Gases injurious to vegetation.

Geology.

The crust of the earth, its structure and denudation. Recognition of igneous, sedimentary, and metamorphic rocks. Weathering of rocks and soils; formation of alluvium, gravels, and glacial deposits. The composition, mode of weathering, and distribution of the various geological formations in the British Isles. The relationship of strata to the configuration of a country and to the overlying soils, rainfall, and drainage.

IV.—FOREST ENGINEERING, INCLUDING LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, BRIDGING, ROAD-MAKING, AND SAW-MILLS.

The use of the level and measuring chain. Chain surveying. Plotting. Levelling and contouring. Measuring and mapping surface areas. Knowledge of the 25" and 6" Ordnance Survey maps and their markings. Use of the planimeter. Plane table surveying. The measurement of solid bodies—as timber, stacked bark, fagots, &c., earthwork.

Use and characteristics of materials—as bricks, stone, lime, mortar, cement, concrete, reinforced concrete, iron, steel.

Simple building construction. Roofs of various types. The construction of simple bridges over streams and gullies. Culverts, &c.

The setting out and formation of roads for temporary and permanent use.

Drainage. Gauging of streams. Water-power. Construction of dams, weirs, water channels, &c. The general arrangement and working of estate saw-mills. Timber slides. Forest tramways. Working and management of steam engines and boilers, oil and petrol engines.

The different modes of fencing and enclosing plantations ; their relative advantages, durability, cost of construction, and repairs.

Detailed drawings from figured sketches.

V.—ARITHMETIC—BOOK-KEEPING.

1. Arithmetic—including Practice, Proportion, and Decimal Fractions.
2. Book-keeping—including the description of books to be kept, the solution of practical questions in Book-keeping and the preparation of Accounts.

EXAMINATION PAPERS, 1922.

PRACTICAL FORESTRY.

1. In a practically treeless hilly area, the planting of which you are entrusted with, explain the principles which would guide you in arriving at the limit of altitude for profitable tree-growth, considering generally the effect of latitude, aspect, wind, and soil (plantable soil being classed good, fair, and poor). State briefly the advantages of such a classification of soils.

2. Explain the method you would adopt in laying down the boundary line of an extensive plantation, assuming that the area to be planted is of a hilly and exposed nature.

State the type of fence you would recommend for the foregoing area for preventing sheep and ground-game from entering the plantation ; and give a specification and an approximate cost per yard of its erection.

3. Compare the respective advantages and disadvantages of Spring and Autumn planting, and indicate under what conditions either season may be preferred.

What are, in your opinion, the most favourable spacing distances at which to plant trees ? Choose any four species, and state the planting distances you would select for each, and state your reasons for the spacings you indicate.

4. Describe the kinds of soil and climatic conditions most favourable for the successful cultivation of the following : Oak, Ash, Larch, Douglas Fir, and Norway Spruce.

5. An estate with 2000 acres of timber is to be sold, and you are invited by the vendor to make a valuation of the timber. The timber is composed of 500 acres of mature wood of Oak, Ash, and Larch, 100 years of age ; 500 acres of pure Scots Pine, 80 years of age ; and 500 acres of pure Scots Pine from 30 to 40 years of age. There are also 500 acres of young plantations under 20 years of age. State how you would proceed to ascertain volume and value of the first three classes, and on what principle you would value the younger plantations. Give prices per cubic foot for the older timber.

6. At what stage in the life of a coniferous plantation should thinning operations be begun ? and state the objects and benefits of thinning.

(Three hours allowed.)

FOREST BOTANY AND FOREST ZOOLOGY.

(A) FOREST BOTANY.

(Four questions only to be attempted.)

1. Describe the buds, flowers, and fruit of Elm, Alder, and Lime.
2. What is the general microscopic structure of the foliage leaf of such a tree as the Beech or Oak? In what essential ways does the structure differ from that in the leaf of a Pine? Suggest reasons for the differences.
3. Write a life-history of the Fungus which causes "Dry-Rot." Suggest preventive measures.
4. Write a life-history of *Taxus baccata*.
5. Name and give characters for recognition of any three forest weeds known to you. State the harm each does.

(B) FOREST ZOOLOGY.

(Two questions only to be attempted.)

1. Describe by means of diagrams the nature of the brood-galleries of the Pine Beetle (*Myelophilus piniperda*), the Large Ash-Bark Beetle (*Hylesinus crenatus*), the Two-Toothed Pine Beetle (*Pityogenes* or *Tomicus bidentatus*).
2. Describe a Lepidopterous insect harmful to Larch or Pine under the headings:—
 - (a) how recognised as adult,
 - (b) how recognised as larva,
 - (c) the nature of the damage,
 - (d) treatment.
3. Name and distinguish four kinds of gall due to insects, and write an account of one of them, from origin to ripe condition.

(Two hours and a half allowed.)

PHYSICS, CHEMISTRY, AND METEOROLOGY.

1. State what is meant by the terms combustion, oxidation, and reduction, distinguishing between the last two. Under which of these heads would you classify the following chemical changes: phosphorus, copper, mercuric oxide, magnesium, heated in air?
2. What type of compound is produced when an element combines with oxygen? Into what groups may the elements be divided according to the properties of these compounds? State the general properties, distinguishing the elements of these groups.
3. Name the chief sources of *any three* of the following metals, and describe the extraction of the metal in *any one* case: sodium, calcium, iron, aluminium, lead, mercury.
4. Define the boiling-point of a liquid. If the boiling-point of a liquid is observed simultaneously at the foot and on the top of a mountain, state and explain any difference which would be noted.
5. Explain the formation of cloud and rain. What is understood by the "dew-point," and what is the purpose of determining it?

(An hour and a half allowed.)

FOREST ENGINEERING.

1. From the following level-book notes, with a datum line 25 feet below the ground-level at distance 0 :

- (a) Calculate and check the reduced levels.
- (b) Plot the section to a horizontal scale of 100 feet to an inch, and a vertical scale of 10 feet to an inch.
- (c) Indicate the direction of bottom line of drainage pipes, and find the slope of this line.

Rise.	B. S.	I. S.	F. S.	Fall.	Reduced level.	Distance in feet.	Remarks.
	14.54				25.00	—	B. M.
		12.63				0	⊙ A, bottom of drain-pipe is to be 2.05 feet below surface at ⊙ A.
		8.51				90	
		10.24				160	
	7.65		14.28			240	
		4.10				350	
		2.89				430	
		8.51				540	
		11.94				620	
			15.19			700	⊙ B, level of water of pond. Bottom of drain-pipe to be 1 foot above water-level.

2. Draw a rough sketch of a field from the following notes, and find its area in acres, &c.

3. Describe, with the aid of a diagram, how you would proceed to carry out the survey of a thick wood, where all the work must be done from the outside, and only a chain and poles are available.

4. A circular plantation is to be formed containing four acres. How many yards of fencing would be required to enclose it?

5. A ditch is to be 3 feet deep, $4\frac{1}{2}$ feet wide at the top, and $1\frac{1}{2}$ feet wide at the bottom ; it is 120 rods in length, and the cost of excavating the soil is estimated at 6d. per cubic yard. What will be the total cost of the work?

6. How would you obtain the width of a river which is too broad for direct measurement? No instrument, other than a chain, is to be used.

Links.		
210	⊙ B	
0	854	
	721	
	600	
124	415	182
	280	
	134	
	⊙ A	110

(Two hours allowed.)

ARITHMETIC AND BOOK-KEEPING.

I. ARITHMETIC.

1. Find the simple interest on £7665 for 35 days at 5 per cent.
2. What is the value of a piece of timber 5 feet 3 inches long, 2 feet 4 inches wide, and 1 foot 2 inches thick @ 10s. 6d. per cubic foot?
3. Find by practice the value of 3 cwt., 3 quarters, and 14 lbs. @ 8s. 4d. per ton.
4. A small wood, square in shape, has an area of 5625 square yards. It is to be fenced, and the fence is to be erected at a distance of 2 yards from the wood. How many yards of fencing are required?

II. BOOK-KEEPING.

Woodlands Estate has been recently purchased. A separate set of books is to be kept for each branch of the estate management by its supervisor, in which the details of all the transactions affecting the branch are to be recorded. At the end of the period these will be incorporated in the estate office books. You are in charge of one of the branches of the estate work.

1. State briefly—

- (1) What books you consider necessary properly to record your transactions.
- (2) What classes of accounts you expect it will be necessary to open in the ledger.
- (3) How at any given date you would satisfy yourself of the accuracy of your book-keeping.
- (4) How you would close your books at the end of the year.

Note.—The transactions you have to record will be confined to purchases and sales, cash receipts and payments, including all expenses incidental to your department, and you will control a bank account.

2. Make the entries for the following transaction in the cash-book and the ledger.

1922.

Jan. 1.	Received from estate office	£150	0	0
" 2.	Paid into bank	120	0	0
" 2.	Ordered on credit from G. Toole, implements valued at	100	0	0
" 2.	Paid for books and stationery in cash	2	0	0
" 3.	Sold to S. Birch on credit 500 Scots pine @ 15s. each			
" 3.	Sold to D. Dick, and received payment, deadwood valued at	10	0	0
" 3.	Bought from F. Timber, young trees on credit	200	0	0
" 4.	Paid hire of horses used in haulage	5	0	0
" 6.	Received from S. Birch to account, and paid into bank	250	0	0
" 6.	Paid G. Toole in full by cheque, less 5 per cent discount	95	0	0
" 7.	Paid wages for week	8	0	0

3. How would you propose to keep trace of all implements purchased or acquired?

(One hour and a half allowed.)

DAIRY DEPARTMENT

EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING

This Examination, instituted in 1897, is conducted by the National Agricultural Examination Board, appointed jointly by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland.

REGULATIONS.

1. The Societies may hold annually in England and in Scotland, under the management of the National Agricultural Examination Board appointed by them, one or more examinations for the National Diploma in the Science and Practice of Dairying; the Diploma to be distinguished shortly by the letters "N.D.D."

2. The Examinations will be held on dates and at places from time to time appointed and duly announced.

3. A non-returnable fee of *Three Guineas* will be required from each candidate.

4. Forms of Entry for the Examination in England may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C. 1," and must be returned to him duly filled up, with the entry fee of £3, 3s., on or before Friday, July 20, 1928.

5. Forms of Entry for the Examination in Scotland may be obtained from "The Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh," and must be returned to him duly filled up, with the entry fee of £3, 3s., on or before Saturday, August 4, 1928.

6. Any candidate may enter for the Examination either in England or Scotland, but not in both, and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versa*.

7. As a preliminary to the acceptance of an application for permission to enter for the Examination, a candidate must produce:—

(1) A certificate testifying that he or she has attended a Diploma Course in the subjects of the Examination covering *two academic years* at an approved Dairy Training Institution and has satisfied the authorities of the Institution of his or her fitness for admission to the Examination. This period shall include six session months' instruction (consisting of not more than two periods) in practical dairy work.

(2) Evidence that he or she has spent at least six months on an approved Dairy farm and taken part in the work. This period must not run concurrently with the six months' practical training referred to in subsection 1.

8. A candidate who has already taken a Degree in Agriculture of

a British University or a Diploma in Agriculture recognised by the National Agricultural Examination Board, will be allowed to enter for the National Diploma in Dairying Examination after one year's training at a recognised institution, providing that such course includes at least six months' training in practical dairy work, and that he or she has worked for at least six months on an approved Dairy Farm.

9. In the Examination a candidate will be required to satisfy the Examiners by means of written papers, practical work, and *viva voce*, that he or she has—

- (1) A general knowledge of the Management of a Dairy Farm, including the rearing and feeding of Dairy Stock, the candidate being required to satisfy the Examiners that he or she has had a thorough training and practical experience in all the details of Dairy work as pursued on a farm.
- (2) A thorough acquaintance, both practical and scientific, with everything connected with the management of a Dairy, and the manufacture of Butter and Cheese.
- (3) A general knowledge of Dairy Factory Management, Dairy Hygiene, Dairy Engineering, and Dairy Book-keeping.
- (4) Practical skill in Dairying, to be tested by the making of Butter and Cheese.

NOTE.—A candidate must be prepared to make any one of the following varieties of Hard Pressed Cheese, the Examiner in Cheesemaking having the option of saying during the Examination what variety a candidate shall make :—

AT THE ENGLISH CENTRE : Cheddar, Cheshire, or Derby.

AT THE SCOTTISH CENTRE : Cheddar, Dunlop, or Cheshire.

10. The maximum marks obtainable and the marks required for a pass in each subject are as follows :—

WRITTEN EXAMINATION—

	Maximum Marks.	Pass Marks.
Dairy Farming and Dairy Hygiene (in two sections)	200	120
(a) Dairy Farming (125 marks).		
(b) Dairy Hygiene (75 marks).		
Dairying (in two sections)	200	120
(a) Principles of Dairying (125 marks).		
(b) Dairy Factory Management and Dairy Engineering (75 marks).		
Chemistry	100	60
(a) General Chemistry and Physics.		
(b) Dairy Chemistry.		
Dairy Bacteriology	100	60
Dairy Book-keeping	100	50

PRACTICAL EXAMINATION—

Hard-pressed Cheese-making	200	150
Blue-veined Cheese-making	100	75
Soft Cheese-making	100	75
Butter-making	200	150
	1300	860

Honours will be awarded to candidates obtaining an aggregate of 80 per cent (1040) of the maximum marks (1300) in the Examination, provided that they also obtain at least 80 per cent (320) of the maximum marks (400) in the Dairy Farming, Hygiene, and Dairying papers.

11. The Board reserve the right to postpone, to abandon, or in any way or at any time to modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

DATES OF EXAMINATIONS IN 1928.

ENGLAND—**THURSDAY**, September 6, and following days, at the University and British Dairy Institute, Reading; last date for receiving applications, **FRIDAY**, July 20.

SCOTLAND—At Dairy School, Kilmarnock. **WRITTEN**—**THURSDAY**, **FRIDAY** and **SATURDAY**, September 6, 7 and 8. **ORAL AND PRACTICAL**—**MONDAY**, September 17, and following days. Last date for receiving applications, **SATURDAY**, August 4.

SYLLABUS OF SUBJECTS OF EXAMINATION

1.—DAIRY FARMING AND DAIRY HYGIENE.

(a) DAIRY FARMING.

SOILS AND CROPS.—Types of Soils suitable for dairying. Rotations and systems of cropping. Cultivation, manuring, and management of grain, root, and forage crops used in dairying. Silage. Temporary and permanent pastures, haymaking.

PLANT PHYSIOLOGY.—Roots, shoots, flowers, fruit, and seeds of agricultural plants.

DAIRY CATTLE.—Characteristics of different breeds. Relation of conformation and appearance to Milk Yield. Choice of dairy cattle in relation to climate and soil. The milk yields of the more important breeds, and suitability for the milk trade, cream, butter, and cheese production.

The management of a Dairy Herd. Cattle breeding and grading up of dairy stock. Calf rearing and management of young stock.

Milk Recording. Systems, and utilisation of results. Details of official schemes.

FOODS AND FEEDING.—Summer and winter feeding of dairy cattle and young stock. Fodder crops and green forage. Roots. Ensilage. Concentrated foods, meals, cakes. Preparation of food. The effect of food on milk and its products.

PIG KEEPING.—Characteristics of the more important breeds. The breeding, rearing, and fattening of pigs. Production of pork and bacon.

FARM MANAGEMENT.—Systems of dairy farming. The selection, stocking, and equipment of typical farms. Organisation of the farm and disposal of produce.

DAIRY ECONOMICS.—The Dairy Industry of Great Britain and its relationship to Agriculture. The relative importance of the various products. The retail milk trade. Markets, Dairy organisation, and co-operation. Modern developments in the Dairy industry. Sources of imported Dairy Produce.

(b) DAIRY HYGIENE.

ANIMAL PHYSIOLOGY.—General functions of the organs of the animal body. Breeding. Parturition. The structure of the udder and the process of milk secretion. Changes which food undergoes during digestion.

VETERINARY.—The more important diseases of dairy cattle and their treatment. The transmission and eradication of disease.

MILK HYGIENE.—Sanitary conditions. Suitability of water supply. Methods of milking and handling of milk. Regulations affecting milk production. Milk in relation to Public Health.

FARM BUILDINGS.—Situation, chief dimensions, and construction of cow houses and dairy buildings. Housing for young stock and pigs. Air space and ventilation, drainage, and water supply.

II.—DAIRYING.

(a) PRINCIPLES OF DAIRYING.

MILK.—Milking by hand and machinery. Importance of cleanliness. Cooling of milk. Prevention of contamination. Pasteurisation. Sterilisation. Keeping of milk. Milk testing and sampling. Use of Gerber and Babcock Testers. Interpretation of results. Legal standards. Legislation affecting milk production.

CREAM.—Separators and their management. Different systems of cream raising and ripening of cream. Changes during ripening. Natural and artificial ripening, and preparation and uses of starters. Preparation of cream for sale. Uses of preservatives. Clotted cream.

BUTTER.—Churns and butter-making appliances. Preparation of cream for churning. Washing and working butter. Butter milk. Packing and transmission of butter. Selection and keeping of butter. Salting. Use of preservatives. Characteristics of good butter and method of judging. Circumstances affecting the flavour, texture, colour, and keeping qualities of butter. Potting butter for keeping. Causes of inferior butter.

CHEESE.—Principles of manufacture. Appliances for cheese-making. The making of the principal varieties of British, Colonial, and Continental cheese from cream, whole milk, and skim milk. Acidity of milk. Common tests for acidity. Uses of rennet and its substitutes. Whey. Ripening and storage of cheese. Packing and sale of cheese. Making of cream and other soft cheese. Defects in cheese and their causes. Judging cheese.

(b) DAIRY FACTORY MANAGEMENT AND DAIRY ENGINEERING.

FACTORY PRACTICE.—Milk depots and handling of factory milk. Systems of cooling and refrigeration. Pasteurisation. Factory butter and cheese-making. Milk powders. Condensed milk. Frozen milk. Ice cream. Dried casein. Fermented milk. Lactose and whey-butter. Margarine manufacture. Equipment of milk depots, butter, cheese, and dairy factories.

FACTORY MANAGEMENT.—Factory routine. Organisation of labour. Handling of milk on arrival at the factory. Methods of dealing with the milk. Milk contracts. Dairy factory legislation.

DAIRY APPLIANCES AND MACHINERY.—Appliances used in the production and handling of milk, butter, and cheese. Care and management of engines and boilers, dairy factory machinery, refrigerating machinery.

BUILDINGS.—Situation, construction and drainage of creameries, milk depots, and dairy factories.

III.—CHEMISTRY.

(a) GENERAL CHEMISTRY AND PHYSICS.

GENERAL PRINCIPLES OF CHEMISTRY.—The nature of elements and compound bodies. The different forms of matter, solid, liquid, gaseous. Specific gravity and instruments for determining it. Specific heat. Temperature and methods of measuring it. Thermometric scales. The influence of temperature in dairy operations. Physical and chemical changes involved in the following: Solution, precipitation, filtration, distillation, oxidation, and reduction. Acids: Bases. Salts: their distinctive properties. Acidity and Alkalinity: their influence and quantitative estimation. Examination and identification of specimens and apparatus.

THE ATMOSPHERE.—Its constituents and impurities; its influence on dairy operations. Atmospheric pressure.

WATER.—Constituents of pure and natural waters. The impurities of water and whence derived. The importance of a pure water supply in dairying.

INORGANIC AND ORGANIC CHEMISTRY.—General knowledge of the elementary chemistry of the following substances and their compounds so far as met with in dairying: Potash, soda, ammonia, lime, phosphoric acid, alcohol, acetic acid, carbonic acid, butyric acid, lactic acid, albumen, casein, fats, milk-sugar, glycerine, pepsin, saponification of fats.

(b) DAIRY CHEMISTRY.

CHEMISTRY OF MILK.—The nature, composition, properties, and chemical constituents of milk. Microscopical appearances presented by milk. The influence of feeding. The changes which occur in the keeping of milk, and how produced. The natural and artificial souring of milk. Rennet, its nature and uses.

MILK PRODUCTS.—Physical and chemical changes involved in the making and keeping of butter and in the manufacture and ripening of cheese. Separated milk. Condensed milk. Fermented milk. Synthetic milk. The use of preservatives.

DAIRY ANALYSIS.—Analytical methods, their theory and practice. A general knowledge of the methods employed in the chemical analysis of milk, butter, and cheese. Adulteration of milk, cream, butter, and cheese, the ways in which adulteration is practised, the changes in composition thereby produced, and a general knowledge of the methods employed in detecting the same.

CHEMISTRY OF FEEDING.—The principal constituents of food materials and the functions they severally fulfil. The influence of food constituents on milk production. Assimilation and digestion. The manurial value of foods. Milk and milk products as foods.

IV.—DAIRY BACTERIOLOGY.

GENERAL BACTERIOLOGY.—Bacteria: their form, classification, growth, and reproduction. The microscope and its use. Staining and microscopic examination of bacteria. Methods of isolation and cultivation. Preparation of culture media. Fermentations and chemical changes produced by bacteria. Enzymes and their action. Effects of heat, cold, sterilisation, pasteurisation, disinfectants, and preservatives on bacteria and enzymes. Bacteriological examination of water supplies.

BACTERIOLOGY OF MILK.—The changes produced by bacteria in milk. Useful forms and their functions. Harmful forms and their effects. Coagulation, discolouration, taints, &c. Bacteriological and other standards in relation to the cleanliness of milk.

MILK PRODUCTS.—The bacteria concerned in the ripening of cream and butter-making. "Starters," their preparation and management. The ripening of hard, soft, and blue-veined cheese. Bacteria injurious to milk products, including condensed and dried milk.

DAIRY MYCOLOGY.—Moulds and yeasts in dairy practice. Their form, classification, growth, and relation to dairy products.

V.—DAIRY BOOK-KEEPING.

GENERAL PRINCIPLES.—Principles of double-entry book-keeping. Use of diary, journal, cash-book, and ledger. Posting to ledger. Preparation of profit and loss account and balance-sheet. Systems of valuation.

FARM BOOK-KEEPING.—Application of the principles of book-keeping to dairy farming and to the sale of milk in bulk or by retail.

FACTORY ACCOUNTS.—Methods of book-keeping as applied to milk depots and dairy factories.

BUSINESS MANAGEMENT.—General office work. Banking and use of cheques.

VI.—PRACTICAL SKILL IN DAIRY WORK.

Candidates must be prepared—(1) To produce before the Examination a satisfactory certificate of proficiency in the milking of cows, signed by a practical Dairy Farmer, and to satisfy the Examiners by a practical test, if so required; (2) to churn and make into Butter a measured quantity of Cream; and (3) to make one Cheese of each of the following varieties: (1) Hard-pressed, of not less than 30 lb. (see Note to Reg. 9 (4)); (2) Veined or blue-moulded, of not less than 10 lb.; and (3) also to make one or other of the following Soft Cheeses: Cambridge, Camembert, Coulommier, or Pont l'Évêque.

The following obtained the Diploma in Scotland in 1927 :—

Diploma.

WILLIAM R. ALEXANDER, Girvan Mains, Girvan.
 NUGGIHALI SEETARAM AYYANGAR, Dairy School, Kilmarnock.
 STANLEY A. CHILD, Tawstock, Barnstaple.
 FLORENCE M. CLOUSTON, Littlehowes, St Mary's Holm, Orkney.
 MARY COWELL, 27 West End Park Street, Glasgow.
 GEORGE DUNLOP, Midland, Prestwick.
 JOHN GLEN, 14 Hillington Gardens, Cardonald, Glasgow.
 CATHERINE H. M. GRANT, Bunachie, Harpsdale, Halkirk, Caithness.
 ERIC KNOWLES, 2 St George's Road, Babbacombe, Torquay.

MARY McARTHUR, Stronchullin Farm, Blairmore, Argyllshire.
 MARY M. MACCASKILL, Glen Cottage, Gairloch, Ross-shire.
 CATHERINE M'COLL, 157 Dalkeith Road, Edinburgh.
 MAGGIE MACDOUGALL, Earlish, by Portree, Isle of Skye.
 ALICE M. M'MILLAN, Sornbeg, Galston, Ayrshire.
 CHRISTINA MATHESON, "Elderslie," Portree, Isle of Skye.
 ISHOBEL M'L. MILLAR, Netherton, Bothwell Road, Hamilton.
 NORAH S. MILNE, 11 Wellington Gardens, Montrose.
 CLIFFORD PRINGLE, "Little Dene," Jesmond, Newcastle-on-Tyne.
 NANCE MACNICOL REID, Castle Stuart, Dalcross, Inverness.
 THOMAS ROBINSON, Stopper Lane, Rimington, near Clitheroe, Lancs.
 DAVID STRATHIE, 18 Bellevue Crescent, Edinburgh.
 RUTH H. TAYLOR, Abbey Flatts, Calderbridge, Cumberland.
 MOLLY A. THOMSON, Ushert Holme, Milngavie, Glasgow.
 JOHN M. WARD, 40 Merryland Street, Govan, Glasgow.
 HAROLD E. WELLS, School House, Dalton, Thirsk, Yorks.
 AGNES WHITE, Busta, Brae, Shetland.
 MARY R. WILSON, Bellevue, Eddleston.

The following gained the Diploma in England in 1927 :—

Diploma.

IRENE DORA BESTON, Studley College, Warwickshire.
 PHEBE FRANCES BOND, East Anglian Institute of Agriculture, Chelmsford.
 GEOFFREY SHAW BRIGGS, The University and British Dairy Institute, Reading.
 DOROTHY AMY BRUNNING, East Anglian Institute of Agriculture, Chelmsford.
 ELLEN GLADYS BUTLER, The University and British Dairy Institute, Reading.
 ALBERT CARTWRIGHT CASTLE, The University and British Dairy Institute, Reading.
 KATE CRAGG, Midland Agricultural and Dairy College, Sutton Bonington.
 EDNA MARY CROSSLEY, Midland Agricultural and Dairy College, Sutton Bonington.
 GERTRUDE MARIA DAVIES, University College of Wales, Aberystwyth.
 WINIFRED DAVIES, The University and British Dairy Institute, Reading.
 WILLIAM EVANS, University College of Wales, Aberystwyth.
 MARY L. EVELYN, Lancashire County Council Dairy School, Hutton, Preston.
 NORAH MATHEWS FISHER, Studley College, Warwickshire.
 SARAH ELSIE GILLSON, Midland Agricultural and Dairy College, Sutton Bonington.
 LESLIE FREDERICK GREGORY, University College of Wales, Aberystwyth.
 MARGARET ANNIE VALMAI GRIFFITHS, University College, Aberystwyth, and The University and British Dairy Institute, Reading.
 MARGARET FRANCES GRIFFITHS, British Dairy Institute, Reading.

- HILDA MAUDE HATCHWELL, The University and British Dairy Institute, Reading.
- WILLIAM FRANCIS HEATHFIELD, East Anglian Institute of Agriculture, Chelmsford.
- HERBERT HODGSON, Midland Agricultural and Dairy College, Sutton Bonington.
- KATHLEEN ROSEMARY CORRY HODGSON, Studley College, Warwickshire.
- MILLCENT ALICE HUNT, The University and British Dairy Institute, Reading.
- OWENA JENKINS, University College, Aberystwyth, Midland Agricultural and Dairy College, and The University and British Dairy Institute, Reading.
- MURIEL MARGARET JOHNSTON, Studley College, Warwickshire.
- MARGARET MOYRA JONES, The University and British Dairy Institute, Reading.
- WILLIAM ARTHUR JONES, University College of Wales, Aberystwyth.
- MILDRED PEPLER KNOWLES, The University and British Dairy Institute, Reading.
- DORIS SIMPSON LINDSAY, The University and British Dairy Institute, Reading.
- FRANCES MARY M'DOUGALL, Lancashire County Council Dairy School, Hutton, Preston.
- PHYLLIS MADDERS, Midland Agricultural and Dairy College, Sutton Bonington.
- ANTHONY JOHN MARVAL, East Anglian Institute of Agriculture, Chelmsford.
- JOHN CHARLES MAUGER, The University and British Dairy Institute, Reading.
- EVAN GRIFFITH OWEN, University College of Wales, Aberystwyth.
- DOROTHY ALICE PEAKE, University College of Wales, Aberystwyth.
- ELIZABETH GWENDOLYN PRITCHARD, The University and British Dairy Institute, Reading.
- SARAH DOROTHY JENNET PROBERT, University College of Wales, Aberystwyth.
- PHYLLIS H. S. READ, Midland Agricultural and Dairy College, Sutton Bonington.
- JOCELYN BARBARA B. ROBERTSHAW, Studley College, Warwickshire.
- RALPH NEWMAN SADLER, East Anglian Institute of Agriculture, Chelmsford.
- RUTH MARGARET SAXELBY, Midland Agricultural and Dairy College, Sutton Bonington.
- MARJORIE STEPHENSON SELLERS, Lancashire County Council Dairy School, Hutton, Preston.
- JOHN NORMAN SHARROCK, East Anglian Institute of Agriculture, Chelmsford.
- K. SINGH, The University and British Dairy Institute, Reading.
- HENRY CHARLES SMITH, Midland Agricultural and Dairy College, Sutton Bonington.
- MICHAEL HENRY SUMNERS, Midland Agricultural and Dairy College, Sutton Bonington.
- GEORGE EDWARD TAYLOR, Midland Agricultural and Dairy College, Sutton Bonington.
- ELEANOR M. THOMAS, University College of Wales, Aberystwyth.

WILLIAM ARTHUR GEORGE TURBUTT, Midland Agricultural and Dairy College, Sutton Bonington.

SYLVIA LILY UDELL, The University and British Dairy Institute, Reading.

ROSE WARD, The University and British Dairy Institute, Reading.

KATHLEEN LINDSAY WIGGLESWORTH, Studley College, Warwickshire.

EXAMINATION PAPERS OF PAST YEARS.

Copies of papers set at past Examinations in Agriculture and in Dairying so far as available may be had on application. Price 6d. per set.
[N.D.A. Papers available are those for the years 1921-1927.]

CHEMICAL DEPARTMENT

Chemist to the Society—J. F. TOCHER, D.Sc., F.I.C., Crown Mansions,
41½ Union Street, Aberdeen.

The object of the Chemical Department is to promote the diffusion of a knowledge of Chemistry as applied to agriculture among the members of the Society, to carry out experiments for that purpose, to assist members who are engaged in making local experiments requiring the direction or services of a chemist, to direct members in regard to the use of manures and feeding-stuffs, to assist them to put the purchase of these substances under proper control, and in general to consider all matters coming under the Society's notice in connection with the Chemistry of Agriculture.

MEMBERS' PRIVILEGES IN RESPECT TO ANALYSES.

MANURES, FEEDING-STUFFS, SOILS, AND AGRICULTURAL PRODUCTS.

This scale of fees applies only to members whose subscriptions are not in arrears.

The fees for analyses made for members of the Society shall, until further notice, be as follows:—

The determination of one ingredient in a single sample of a <i>manure</i> or of a <i>feeding-stuff</i> , ...	5s.
The determination of two or more ingredients in a single sample of a <i>manure</i> or of a <i>feeding-stuff</i> , ...	10s.

For example—

Linseed and other cakes, for oil or for albuminoids, ...	}	5s.
Feeding-meals, ground cereals, for oil or for albuminoids, ...		
Bone-meals, for nitrogen or for phosphate, ...		
Compound manures, for nitrogen or for soluble phosphates, or for insoluble phosphates or for potash, ...		
Superphosphate, for soluble phosphate or for insoluble phosphate, ...		
Thomas-phosphate powder, for citric soluble phosphate or for total phosphate, ...	}	10s.
Linseed and other cakes, for oil and albuminoids, &c., ...		
Feeding-meals, ground cereals, for oil, albuminoids, &c., ...		
Bone-meals, for nitrogen, phosphate, &c., ...		
Compound manures, for nitrogen, soluble phosphates, insoluble phosphates, and potash, ...		
Superphosphate, for soluble phosphate and insoluble phosphate, ...		
Thomas-phosphate powder, for citric soluble phosphate and total phosphate, ...		

Limestone, giving the percentage of lime, ...	£0 5 0
Limestone, complete analysis, ...	1 0 0
Lime, including ground lime, percentage of alkaline lime, ...	0 5 0
" " " complete analysis, ...	1 0 0
Analysis of soil, to determine fertility and recommendation of manurial treatment, ...	1 10 0
Complete analysis of soil, ...	2 10 0
Analysis of agricultural products—hay, grain, ensilage, roots, &c., ...	1 0 0

Not more than four samples per annum will be analysed under the Society's scheme for any one member.

Note to Members sending Samples for Analysis.

The Directors are anxious to take any steps in their power to expose the vendors of inferior fertilisers and feeding-stuffs, and the members can give them assistance in this by supplying to the chemist, when sending samples for analyses, information as to the guarantee, if any, on which the goods were sold, and also as to the price charged.

These charges apply only to analyses made for agricultural purposes, and for the sole and private use of members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

Valuations of manures, according to the Society's scale of units, will be supplied if requested.

DAIRY PRODUCE.

Milk, full analysis, ...	£0 10 0
" solids and fat, ...	0 5 0
" fat only, ...	0 2 6

(Not more than six samples of milk per annum will be analysed under the Society's scheme for any one member.)

Butter, full analysis, ...	0 10 0
" partial analysis (water and fat), ...	0 5 0
Cheese, ...	0 10 0

WATER.

Analysis of water ¹ to determine purity and fitness for domestic use (the Committee reserve power to refuse from one member more than two samples annually under the Society's scheme).....at the reduced fee of	1 0 0
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MISCELLANEOUS.

Search for poisons in food or viscera, ...	2 0 0
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(Veterinary surgeons are not entitled to have searches made for poisons in food or viscera under the Society's scheme for clients who are not members of the Society.)

Sulphate of copper, percentage of copper and purity, ...	0 5 0
" " complete analysis, ...	0 10 0

Arsenic, carbolic acid and tar acids, and other poisons used in making sheep dips, insecticides, &c., ...	5s. to £1
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Samples should be sent (carriage paid) to Dr J. F. Tocher, Crown Mansions, 41½ Union Street, Aberdeen.

¹ Cases containing bottles for water samples and instructions for sampling are sent from the laboratory on application.

INSTRUCTIONS FOR SELECTING SAMPLES FOR ANALYSIS.

MANURES.

Any method of sampling mutually agreed upon between buyer and seller may be adopted, but the following method is recommended as a very complete and satisfactory one: Four or more bags should be selected for sampling. Each bag is to be emptied out separately on a clean floor, worked through with the spade, and one spadeful taken out and set aside. The four or more spadefuls thus set aside are to be mixed together until a uniform mixture is obtained. Of this mixture one spadeful is to be taken, spread on paper, and still more thoroughly mixed, any lumps which it may contain being broken down with the hand. Of this mixture two samples of about half a pound each should be taken by the purchaser or his agent, in the presence of the seller or his agent or two witnesses (due notice having been given to the seller of the time and place of sampling), and these samples should be taken as quickly as possible, and put into bottles or tin cases to prevent loss of moisture, and having been labelled, should be sealed by the samplers—one or more samples to be retained by the purchaser, and one to be sent to the chemist for analysis.

FEEDING-STUFFS.

Samples of feeding-stuffs which are in the form of meal may be taken in a similar manner.

Samples of cake should be taken by selecting four or more cakes from the bulk. These should be nipped to a size not larger than walnuts. The nipped cake should then be thoroughly mixed and samples of not less than one pound each taken from it. The samples should be put into bottles or tins, sealed up, and labelled. One sample should be sent to the analyst, and one or more duplicates retained by the purchaser.

SOILS.

Dig a little trench about two feet deep, exposing the soil and subsoil. Cut from the side of this trench vertical scrapings of the soil down to the top of the subsoil. Catch these on a clean board, and collect in this manner two pounds of soil taken from the whole surface of the section. Similar scrapings of subsoil immediately below should be taken and preserved separately. Five or six similarly drawn samples at least should be taken from different parts of the field, and kept separate while being sent to the chemist, that he may examine them individually before mixing in the laboratory.

VEGETABLE PRODUCTS.

Turnips, &c., at least 50 bulbs carefully selected as of fair average growth.

Hay, straw, ensilage, &c., should be sampled from a thin section cut across the whole stack or silo, and carefully mixed; above 2 lb. weight is required for analysis.

Grain should be sampled like manures.

DAIRY PRODUCE.

Milk.—Samples of milk from individual cows should be taken direct from the milk-pail after complete milking. Average samples from a num^o

ber of cows should be taken immediately after milking. Specify whether the sample is morning or evening milk, or a mixture of these. Samples to be tested for adulteration should not be drawn from the bottom or taken from the top of standing milk, but they should be ladled from the vessel after the milk has been thoroughly mixed. Samples of milk should be sent immediately to the analyst.

For most purposes a half-pint bottle of milk is a large enough sample.

Butter and Cheese.—About quarter-pound samples are required.

WATERS.

When the water is from a well, it should be pumped for some minutes before taking the sample.

If the well has been standing unused for a long time, it should be pumped for some hours, so that the water may be renewed as far as possible.

If the well has been newly dug or cleaned out, it should be pumped as dry as possible, daily, for a week before taking the sample.

Water from cisterns, tanks, ponds, &c., should be sampled by immersing the bottle entirely under the water, and holding it, neck upwards, some inches below the surface. *Water from the surface should not be allowed to enter the bottle.*

Spring or stream water should not be sampled in very wet weather, but when the water is in ordinary condition. Such waters should be sampled by immersing the bottle, if possible; but if not deep enough for that purpose, a perfectly clean cup should be used for transferring the water to the bottle.

When the bottle has been filled the stopper should be rinsed in the water before replacing it.

Interference with or disturbance of wells or springs, or the ground in their immediate vicinity, must be carefully avoided during sampling, and for at least twenty-four hours before it.

After a sample has been taken, it should be sent to the laboratory as speedily as possible.

A description of the source and circumstances of the water should accompany the sample, as the interpretation of the analytical results depends to some extent on a knowledge of such particulars.

N.B.—Stone jars and old wine bottles are unsuitable for conveying samples. Winchester quarts chemically cleaned should be obtained from the laboratory, Crown Mansions, 41½ Union Street, Aberdeen.

LOCAL ANALYTICAL ASSOCIATIONS.

With the view of encouraging, as well as regulating the conduct of, Local Analytical Associations, the Society, from 1881 to 1893, contributed from its funds towards their expenses a sum not exceeding £250 annually. In view of the passing of the Fertilisers and Feeding Stuffs Act, 1893, it was decided, at a meeting of the Directors on the 6th of December 1893, to discontinue that grant after the 1st of March 1894.

COMPOSITION AND CHARACTERISTICS OF MANURES
AND FEEDING-STUFFS.

(See 'Transactions,' Fifth Series, vol. xi., 1899.)

FORMS OF GUARANTEE

GUARANTEE OF MANURE.

I guarantee that the manure called.....and sold by me to
.....contains—

Soluble phosphoric acid = Phosphate of lime dissolved.....per cent.
Insoluble phosphoric acid = Phosphate of lime undissolved.....per cent.
Potash salts . . . = Potash (K_2O) per cent.
Total nitrogen per cent.

Signature of seller.....

Date.....19...

GUARANTEE OF FEEDING-STUFF.

I guarantee that the feeding-stuff called.....and sold by me to
.....contains—

..... per cent albuminoids.
 per cent oil.

Signature of seller.....

Date.....19...

[PRICES OF FERTILISERS, &c.]

PRICES OF FERTILISERS AND FEEDING-STUFFS FOR SEASON 1928.

(Cash Prices as fixed on 1st February. These prices are subject to variation from month to month or oftener.)

SUPERPHOSPHATES.

ITEM TO BE VALUED.	PRICES PER UNIT FOR THE UNDERNOTED PERCENTAGES.		
	30 per cent.	35 per cent.	38 per cent.
PHOSPHATES DISSOLVED . . .			
February Price . . .	£2 10 0	£2 15 0	£3 0 0
Price per Unit . . .	1/8	1/7	1/7

N.B.—These units are based on the RETAIL CASH PRICES OF MANURES in bags at Leith. The figures for Glasgow are 2/6 per ton less. When these units are multiplied by the percentages in the analysis of a Manure, they will produce a value representing very nearly the cash price per ton at which TWO TONS may be bought in fine sutable condition at Leith or Glasgow. Larger purchases may be made on more favourable terms.

FERTILISERS.

(Other than Superphosphates.)

Name of Fertiliser.	Guarantee.	Price per Ton.	Price per Unit.
Sulphate of Ammonia neutral * . . .	20·6 % Nitrogen	10 13 0	£ s. d. 9 10 4
Basic Slag	30 % Total Phosphate	2 10 0	0 1 8
Bone Meal, Home	40 % " "	2 15 0	0 1 4½
" Indian	4 Nit. 45 % "	8 15 0	N 0 19 2½
Steamed Bone Flour	4 " 45 % "	8 15 0	P 0 2 2½
Ground Mineral Phosphate† . . .	4 " 60 % "	6 5 0	N 0 19 2½
" " " " " " " " " " " "	56 % "	2 2 6	P 0 2 2½
" " " " " " " " " " " "	60 % "	2 5 0	N 0 16 6½
" " " " " " " " " " " "	65 % "	2 15 0	P 0 1 10½
" " " " " " " " " " " "	74 % "	8 5 0	0 0 9
Nitrate of Soda	15·5 % Nitrogen	11 5 0	0 0 9
" Lime	15·5 % "	11 4 0	0 0 10
Potash Salt	80·0 % Potash	4 17 6	0 0 10½
" " " " " " " " " " " "	20·0 % "	3 10 0	0 15 2
Kainit	14·0 % "	3 1 0	0 14 5½
Muriate of Potash	50·0 % "	9 0 0	0 8 3
Sulphate of Potash	50·0 % "	11 2 6	0 8 6
Calcium Cyanamide (Nitrolim)‡ . .	19 % Nitrogen	8 18 0	0 4 5½

The prices for all fertilisers are cash prices for two-ton lots in bags at Leith or Glasgow unless otherwise stated.

* Carriage paid to any railway station in six-ton lots. Four-ton lots 1/- more.

† 80 per cent through 100 meshes to the linear inch; 2/6 extra for 80 per cent through 120 meshes.

‡ Carriage paid in four-ton lots to purchaser's station. The price for March, April, and May is 2/- per ton more than the February price.

Note on Slags.—Ground Basic Slag will be delivered (in 1½-cwt. bags), carriage paid, in four-ton lots and upwards to any station in the following Counties:—Slag containing 80 per cent Tricalcium Phosphate—Berwick and Roxburgh, 54/-; Ayrshire and Renfrew, 57/6; Dumbarton, 58/6; Lanark, Edinburgh, Haddington, Stirling, Clackmannan, Linlithgow, Perth, 59/6; Kinross and Fife, 61/-; Peebles, Dumfries, Selkirk, 61/6; Wigtown, 62/-; Kirkcudbright, 62/6; Forfar and Argyll 64/6. The terms are net cash one month.

FEEDING STUFFS.

Name of Feeding Stuff.	Price per Ton.	Name of Feeding Stuff.	Price per Ton.
	£ s. d.		£ s. d.
Linseed Cake (Home) at Leith .	11 15 0	Bran (Leith)	8 17 6
" " at Glasgow .	12 5 0	" (Glasgow)	9 0 0
Cotton Seed Cake (Bombay) .	7 15 0	Parings (Fine Offals)	10 0 0
Cotton Seed Cake (Egyptian) at		Dried Brewers' Grains	8 17 6
Aberdeen	8 17 6	Dried Distillery Grains (Leith) .	9 12 6
Decorticated Ground Nut Cake .	12 10 0	" (Glasgow)	9 2 6
Undecorticated " "	10 0 0	Feeding Treacle	7 0 0
Palm Kernel Cake	9 12 6	Locust Beans (Kibbled)*	8 7 6
Decorticated Cotton Seed Meal—		Maize (Round Plate)*	9 10 0
7% oil, 86% albuminoids	11 15 0	Beans (Imported China)	11 12 6
8% oil, 42% albuminoids	12 12 6	Home Oats (Feeding)	9 10 0
Rice Bran Meal	8 10 0	White Fish Meal (Aberdeen)	20 10 0
Broad Bran (Leith)	9 12 6	Dried Sugar Beet Pulp—very	(price
" " (Glasgow)	9 5 0	scarce	variable)

* In Railway Sacks.

CLASSIFICATION OF MANURES.

BONE MEALS	{	Genuine Bone Meal contains at least 45 per cent Tricalcium Phosphate, and from 2.75 per cent to 4 per cent Nitrogen. If phosphates are low nitrogen will be high, and conversely. If Bone Meal is so finely ground that 90 per cent or over passes a sieve of $\frac{1}{16}$ -inch mesh, an addition of 2/6 per ton should be made to the Valuation.
STEAMED BONE FLOUR	{	Ground to flour, and containing about 60 to 65 per cent Phosphates and about 1 to $1\frac{1}{2}$ per cent Nitrogen.
MIXTURES AND COMPOUND MANURES	{	To be valued according to the following units: Nitrogen, 11/6; Soluble Phosphate, 2/-; Insoluble Phosphate, 1/3; and Potash, 4/-. The value given is exclusive of mixing, bags, and bagging, and is the value at Leith or Glasgow.
DISSOLVED BONES	{	Must be pure—i.e., containing nothing but natural bones and sulphuric acid.

INSTRUCTIONS FOR VALUING MANURES.

The unit used for the valuation of manures is the hundredth part of a ton, and as the results of analyses of manures are expressed in parts per hundred, the percentage of any ingredient of a manure when multiplied by the price of the unit of that ingredient represents the value of the quantity of it contained in a ton.

As an example take muriate of potash; a good sample (see p. 46) will be guaranteed to contain 50 per cent of oxide of potash. All potash manures are valued according to the amount of potash (oxide of potash) they yield, and muriate of potash yields 50 per cent potash (K_2O)—i.e., 50 units per ton; and as a ton of muriate of potash costs £9, the price of the unit is the fiftieth part of that—viz., $3/7\frac{1}{2}$. If on analysis a sample of muriate of potash guaranteed to contain 50 per cent of potash is found to contain only 48 per cent, the price per ton will be $7/2\frac{1}{2}$ (twice $3/7\frac{1}{2}$) less—viz., £8, 12s. 9 $\frac{1}{2}$ d.

Similarly with all other manures, the price per unit is derived from the price per ton of a sample of good material up to its guarantee, and therefore the proper price per ton of a manure is found by multiplying the price of the unit of the valuable ingredient by the percentage as found by analysis. If a manure contains more than one valuable ingredient, the unit value of each ingredient is multiplied by its percentage, and the values so found when added together give approximately the price per ton of the manure.

Nitrate of soda contains no ammonia, but it contains nitrogen, and 14 units of nitrogen are equivalent to 17 units of ammonia.

The commercial values of manures are determined by means of the UNITS in the following manner:—

Take the results of analysis of the manure, and look for the following substances:—

Phosphates dissolved (or soluble phosphate)	} No other items but these are to be valued.
Phosphates undissolved (or insoluble phosphate)	
Total phosphates	
Nitrogen	
Potash	

Should the results of analysis or the guarantee not be expressed in that way, the chemist or the seller should be asked to state the quantities in these terms.

Suppose the manure is ground mineral phosphate—

The proportion of phosphate present in a sample guaranteed to contain 74 per cent tricalcium phosphate, may be 72 per cent tricalcium phosphate. The price per unit of phosphate in ground mineral phosphate (74 per cent grade) is $10\frac{1}{2}$ d. The value of ground mineral phosphate containing 72 per cent phosphate is therefore 72 times $10\frac{1}{2}$ d., equal to £3, 3s. per ton.

Suppose the manure is a superphosphate—say an ordinary superphosphate, 34 per cent soluble phosphate,—the price per unit of phosphate in superphosphate (35 per cent grade) is $1\frac{1}{7}$. It is valued thus—

Soluble phosphate. 34 times $1\frac{1}{7}$, equal to, say, £2, 13s. 5d.

Insoluble phosphate is not valued in a superphosphate.

Suppose the manure is a compound fertiliser containing 3 per cent nitrogen; 12 per cent soluble phosphate; 6 per cent insoluble phosphate; and 4 per cent potash.

The value of the nitrogen	will be 3 times $11\frac{1}{6}$	=	£1 14 6	per ton.
„ „ soluble phosphate	„ 12 „ $2\frac{1}{2}$	=	1 4 0	„
„ „ insoluble „	„ 6 „ $1\frac{1}{3}$	=	0 7 6	„
„ „ potash	„ 4 „ $4\frac{1}{2}$	=	0 16 0	„
£4 2 0				

The value of this manure will thus be £4, 2s. per ton, exclusive of the cost of mixing, bags, and bagging.

Notes.—The units have reference solely to the MARKET PRICES of Manures, and not to their AGRICULTURAL VALUES.

TABLE OF COMPENSATION VALUES FOR 1928.

TABLE SHOWING THE VALUE OF FEEDING-STUFFS AS MANURE PER TON, AND THE COMPENSATION VALUE PER TON OF FOOD CONSUMED, BASED ON THE AVERAGE UNIT PRICES OF FERTILISERS FOR 1928.

The following is a Table showing (under Section A) the average proportions of digested nitrogen, undigested nitrogen, phosphoric acid, and potash present in the feeding-stuffs named. The Table also shows the value per unit of nitrogen (digested and undigested), phosphoric acid, and potash, the prices per unit being the value per unit for compound manures prevailing for 1928. Under Section B of the Table is shown the compensation value per ton of food consumed for each of the feeding-stuffs named, based on the unit prices for 1928. Column (1) of Section B of the Table shows the value per ton recovered in dung; Col. (2) of the same section shows the value of the lasting part of dung per ton; while the remaining three columns show the residual values per ton after one crop, two crops, and three crops have been removed.

In accordance with the decision arrived at by the Committee appointed by a representative meeting of Scottish agriculturists, who reported in September 1917 on the "Compensation for Manurial Improvements and Cumulative Fertility," under the Agricultural Holdings (Scotland) Act, 1908, the value of undigested nitrogen per ton as manure is calculated as being 70 per cent of the value of digested nitrogen. The residual value, after one crop has been removed, is taken as one-half of the original residual value. Residual values, after one crop has been removed, are reduced by one-half after each crop.

Foods.	VALUE PER					
	Digested Nitrogen.			Undigested Nitrogen.		
	Per cent in food.	Value at 1ls. 6d. per unit.	Two-fifths value to manure.	Per cent in food.	* Value at 8s. per unit.	Three-fourths value to manure.
	(1)	(2)	(3)	(4)	(5)	(6)
		s. d.	s. d.		s. d.	s. d.
Cotton-cake, decorticated	5.92	68 1	27 3	0.98	7 10	5 10
Cotton-cake, undecorticated	2.73	31 5	12 7	0.81	6 6	4 11
Linseed-cake	4.08	46 11	18 9	0.67	5 4	4 0
Linseed	3.28	37 9	15 1	0.32	2 7	1 11
Soya-bean cake	6.10	70 2	28 1	0.75	6 0	4 6
Palm-nut cake	1.88	21 7	8 8	0.62	5 0	3 9
Cocoa-nut cake	2.65	30 6	12 2	0.75	6 0	4 6
Earth-nut cake	6.86	78 11	31 7	0.76	6 1	4 7
Rape cake	3.97	45 8	18 3	0.93	7 5	5 7
Beans	3.48	40 0	16 0	0.52	4 2	3 2
Peas	3.10	35 8	14 3	0.50	4 0	3 0
Wheat	1.49	17 2	6 10	0.31	2 6	1 11
Barley	1.16	13 4	5 4	0.49	3 11	2 11
Oats	1.52	17 6	7 0	0.48	3 10	2 11
Maize	1.22	14 0	5 7	0.48	3 10	2 11
Rice-meal	1.08	12 5	5 0	0.82	6 7	4 11
Locust beans	0.82	9 5	3 9	0.38	3 0	2 3
Malt	1.34	15 5	6 2	0.36	2 11	2 2
Malt culms	3.12	35 11	14 4	0.78	6 3	4 8
Bran	1.98	22 9	9 1	0.52	4 2	3 2
Brewers' and distillers' grains (dried)	2.34	26 11	10 9	0.96	7 8	5 9
Brewers' and distillers' grains (wet)	0.59	6 9	2 8	0.22	1 9	1 4
Dried distillery dreg	3.45	39 8	15 10	1.86	14 11	11 2
Clover hay	1.21	13 11	5 7	1.03	8 3	6 2
Meadow hay	0.88	10 1	4 0	0.62	5 0	3 9
Wheat straw	0.02	0 3	0 1	0.43	3 5	2 7
Barley straw	0.10	1 2	0 6	0.30	2 5	1 10
Oat straw	0.17	1 11	0 9	0.33	2 8	2 0
Mangolds	0.15	1 9	0 8	0.07	0 7	0 5
Swedes	0.16	1 10	0 9	0.09	0 9	0 7
Turnips	0.13	1 6	0 7	0.05	0 5	0 4
Fish-meal	8.08	92 11	37 2	0.90	7 2	5 5

See last paragraph of explanatory note to the Table.

A.						B.					
TON AS MANURE.						COMPENSATION VALUE PER TON OF FOOD CONSUMED.					
Phosphoric Acid.			Potash.			Residual Value after.					
Per cent in food.	Value at 4s. 6d. per unit.	Three- fourths value to manure.	Per cent in food.	Value at 4s. per unit.	Three- fourths value to manure.	† (1) Value re- covered in dung.	‡ (2) Value of lasting part of dung.	* (3) One crop.	* (4) Two crops.	* (5) Three crops.	
(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	
	s. d.	s. d.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
3-10	13 11	10 5	2-00	8 0	6 0	49 6	22 3	11 2	5 7	2 9	
2-00	9 0	6 9	2-00	8 0	6 0	30 3	17 8	8 10	4 5	2 3	
2-00	9 0	6 9	1-40	5 7	4 2	33 8	14 11	7 6	3 9	1 10	
1-54	6 11	5 2	1-37	5 6	4 2	26 4	11 3	5 8	2 10	1 5	
3-00	5 10	4 5	2-20	8 10	6 8	43 8	15 7	7 10	3 11	1 11	
1-20	5 3	3 11	0-50	2 0	1 6	17 10	9 2	4 7	2 4	1 2	
1-40	6 4	4 9	2-00	8 0	6 0	27 5	15 3	7 8	3 10	1 11	
2-00	9 0	6 9	1-50	6 0	4 6	47 5	15 10	7 11	4 0	2 0	
2-50	11 3	8 5	1-50	6 0	4 6	36 9	18 6	9 3	4 8	2 4	
1-10	4 11	3 8	1-30	5 2	3 11	26 9	10 9	5 5	2 8	1 4	
0-85	3 10	2 11	0-96	3 11	2 11	23 1	8 10	4 5	2 3	1 1	
0-85	3 10	2 11	0-53	2 1	1 7	13 3	6 5	3 3	1 7	0 10	
0-75	3 4	2 6	0-55	2 2	1 8	12 5	7 1	3 7	1 9	0 11	
0-60	2 8	2 0	0-50	2 0	1 6	13 5	6 5	3 3	1 7	0 10	
0-60	2 8	2 0	0-37	1 6	1 2	11 8	6 1	3 1	1 6	0 9	
0-60	2 8	2 0	0-37	1 6	1 2	13 1	8 1	4 1	2 0	1 0	
0-80	3 7	2 8	0-80	3 2	2 5	11 1	7 4	3 8	1 10	0 11	
0-80	3 7	2 8	0-60	2 5	1 10	12 10	6 8	3 4	1 8	0 10	
2-00	9 0	6 9	2-00	8 0	6 0	31 9	17 5	8 9	4 4	2 2	
2-70	12 2	9 2	1-45	5 10	4 5	25 10	16 9	8 5	4 2	2 1	
1-61	7 3	5 5	0-20	0 10	0 8	22 7	11 10	5 11	3 0	1 6	
0-42	1 11	1 5	0-05	0 2	0 2	5 7	2 11	1 6	0 9	0 4	
0-44	2 0	1 6	0-22	0 11	0 8	29 2	13 4	6 8	3 4	1 8	
0-57	2 7	1 11	1-50	6 0	4 6	18 2	12 7	6 4	3 2	1 7	
0-40	1 10	1 5	1-60	6 5	4 10	14 0	10 0	5 0	2 6	1 3	
0-24	1 1	0 10	0-80	3 2	2 5	5 11	5 10	2 11	1 6	0 9	
0-18	0 10	0 8	1-00	4 0	3 0	6 0	5 6	2 9	1 5	0 8	
0-24	1 1	0 10	1-00	4 0	3 0	6 7	5 10	2 11	1 6	0 9	
0-07	0 4	0 3	0-40	1 7	1 2	2 6	1 10	0 11	0 6	0 3	
0-06	0 3	0 2	0-22	0 11	0 8	2 2	1 5	0 9	0 4	0 2	
0-05	0 3	0 2	0-30	1 2	0 11	2 0	1 5	0 9	0 4	0 2	
7-24	32 7	24 5	0-50	2 0	1 6	68 6	31 4	15 8	7 10	3 11	

† The figures in column (13) are the sum of columns (3), (6), (9), and (12).

‡ The figures in column (14) are the figures in column (13) from which the corresponding figures in column (3) have been subtracted.

BOTANICAL DEPARTMENT

Consulting Botanist to the Society—(vacant)

The Society have fixed the following rates of charge for the examination of plants and seeds for the *bona fide* and individual use and information of members of the Society (not being seedsmen), who are particularly requested, when applying to the Consulting Botanist, to mention the kind of examination they require, and to quote its number in the subjoined schedule. The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid.

Scale of Charges.

1. A report on the purity, amount, and nature of foreign materials, and the germinating power of a sample of seed, 1s.
2. Determination of the species of any weed or other plant, or of any vegetable parasite, with a report on its habits and the means for its extermination or prevention, 1s.
3. Report on any disease affecting farm crops, 1s.
4. Determination of the species of any natural grass or fodder plant, with a report on its habits and pasture or feeding value, 1s.

The Consulting Botanist's Reports are furnished to enable members—purchasers of seeds and corn for agricultural or horticultural purposes—to test the value of what they buy, and are not to be used or made available for advertising or trade purposes by seedsmen or otherwise.

Purchase of Seeds.

The purchaser should obtain from the vendor, by invoice or other writing, the proper designation of the seed he buys, with a guarantee of the percentage of purity and germination, and of its freedom from ergot, and in the case of clover, from the seeds of dodder or broom-rape.

It is strongly recommended that the purchase of *prepared mixtures* of seeds should be avoided. The different seeds should be purchased separately and mixed by the farmer: mixtures cannot be tested for germination.

The Sampling of Seeds.

The utmost care should be taken to secure a fair and honest sample. This should be drawn from the bulk delivered to the purchaser, and not from the sample sent by the vendor.

When legal evidence is required, the sample should be taken from the bulk, and placed in a sealed bag in the presence of a witness. Care

should be taken that the sample and bulk be not tampered with after delivery, or mixed or brought in contact with any other sample or bulk.

At least one ounce of grass and other small seeds should be sent, and two ounces of cereals and the larger seeds. When the bulk is obviously impure the sample should be at least double the amount specified. Grass seeds should be sent at least four weeks, and seeds of clover and cereals two weeks, before they are to be used.

The exact name under which the sample has been sold and purchased should accompany it.

Reporting the Results

The Report will be made on a schedule in which the nature and amount of impurities will be stated, and the number of days each sample has been under test, with the percentage of the seeds which have germinated.

"Hard" clover seeds, though not germinating within the time stated, will be considered good seeds, and their percentage separately stated.

The impurities in the sample, including the chaff of the species tested, will be specified in the schedule, and only the percentage of the pure seed of that species will be reported upon; but the REAL VALUE of the sample will be stated. The Real Value is the combined percentages of purity and germination, and is obtained by multiplying these percentages and dividing by 100: thus in a sample of Meadow Fescue having 88 per cent purity and 95 per cent germination, 88 multiplied by 95 gives 8360, and this divided by 100 gives 83·6, the Real Value.

Selecting Specimens of Plants.

The whole plant should be taken up and the earth shaken from the roots. If possible the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

Parcels or letters containing seeds or plants for examination (carriage or postage paid) must be addressed to

NOTE.—Members are reminded that seeds may now be tested at the Board of Agriculture for Scotland Seed-testing Station. Samples should be addressed to Mr Anderson, SEED-TESTING STATION, East Craigs, Corstorphine, Midlothian.

ENTOMOLOGICAL DEPARTMENT

Consulting Entomologist to the Society—Dr R. STEWART MACDOUGALL,
9 Dryden Place, Edinburgh.

Arrangements have been made with Mr R. Stewart MacDougall, M.A., D.Sc., Edinburgh, to advise members of the Society regarding insects or allied animals which, in any stage of their development, infest—

- | | |
|-----------------------------------|-------------------------------------|
| (a) Farm crops. | (d) Fruit and fruit trees. |
| (b) Stored grain. | (e) Forest trees and stored timber. |
| (c) Garden and greenhouse plants. | (f) Live stock (including poultry). |

Members consulting Dr MacDougall should forward with their queries examples of the injured plants, or the injured parts of plants, &c., as well as specimens of the insects or other animals believed to be the cause of the injury.

Specimens should be sent in tin or wooden boxes, or in quills, to prevent injury in transmission.

Address letters and parcels (carriage or postage paid) to Dr R. Stewart MacDougall, 9 Dryden Place, Edinburgh.

The Directors have fixed the fee payable by members to Dr MacDougall at 1s. for each case upon which he is consulted : this fee must be sent to him along with the application for information.

PREMIUMS

GENERAL REGULATIONS FOR COMPETITORS.

1. It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the writers whose papers are published in the 'Transactions.'

2. All reports must be legibly written, and on one side of the paper only; they must specify the number and subject of the Premium for which they are in competition; they must bear a distinguishing motto, and be accompanied by a sealed letter, similarly marked, containing the name and address of the reporter—initials must not be used.

3. No sealed letter, unless belonging to a report found entitled to the Premium offered, or a portion of it, will be opened without the author's consent.

4. Reports for which a Premium, or a portion of a Premium, has been awarded, become the property of the Society, and cannot be published in whole or in part, nor circulated in any manner, without the consent of the Directors. All other papers will be returned to the authors if applied for within twelve months.

5. The Society is not bound to award the whole or any part of a Premium.

6. All reports must be of a practical character, containing the results of the writer's own observation or experiment, and the special conditions attached to each Premium must be strictly fulfilled. General essays, and papers compiled from books, will not be rewarded or accepted. Weights and measurements must be indicated by the imperial standards.

7. The Directors, before or after awarding a Premium, shall have power to require the writer of any report to verify the statements made in it.

8. The decisions of the Board of Directors are final and conclusive as to all matters relating to Premiums, whether for Reports or at General or District Shows; and it shall not be competent to raise any question or appeal touching such decisions before any other tribunal.

9. The Directors will welcome papers from any Contributor on any suitable subject, whether included in the Premium List or not; and if the topic and the treatment of it are both approved, the writer may be remunerated and his paper published.

CLASS I. REPORTS.

SECTION 1.—THE SCIENCE AND PRACTICE OF AGRICULTURE.

FOR APPROVED REPORTS.

1. On any useful practice in Rural Economy adopted in other countries, and susceptible of being introduced with advantage into Scotland—The Gold Medal. To be lodged by 1st November in any year.

The purpose chiefly contemplated by the offer of this premium is to induce travellers to notice and record such particular practices as may seem calculated to benefit Scotland. The Report to be founded on personal observation.

2. Approved Reports on other suitable subjects. To be lodged by 1st November in any year.

SECTION 2.—ESTATE IMPROVEMENTS.

FOR APPROVED REPORTS.

1. By the Proprietor in Scotland who shall have executed the most judicious, successful, and extensive Improvement—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

Should the successful Report be written for the Proprietor by his resident factor or farm manager, a Minor Gold Medal will be awarded to the writer in addition to the Gold Medal to the Proprietor.

The merits of the Report will not be determined so much by the mere extent of the improvements, as by their character and relation to the size of the property. The improvements may comprise reclaiming, draining, enclosing, planting, road-making, building, and all other operations proper to landed estates. The period within which the operations may have been conducted is not limited, except that it must not exceed the term of the Reporter's proprietorship.

2. By the Proprietor or Tenant in Scotland who shall have reclaimed within the ten preceding years not less than forty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

3. By the Tenant in Scotland who shall have reclaimed within the ten preceding years not less than twenty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

4. By the Tenant in Scotland who shall have reclaimed not less than ten acres within a similar period—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The Reports in competition for Nos. 2, 3, and 4 may comprehend such general observations on the improvement of waste lands as the writer's

experience may lead him to make, but must refer especially to the lands reclaimed—to the nature of the soil—the previous state and probable value of the subject—the obstacles opposed to its improvement—the details of the various operations—the mode of cultivation adopted—and the produce and value of the crops produced. As the required extent cannot be made up of different patches of land, the improvement must have relation to one subject; it must be of profitable character, and a rotation of crops must have been concluded before the date of the Report. *A detailed statement of the expenditure and return and a certified measurement of the ground are requisite.*

5. By the Proprietor or Tenant in Scotland who shall have improved within the ten preceding years the Pasturage of not less than thirty acres, by means of top-dressing, draining, or otherwise, without tillage, in situations where tillage may be inexpedient—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

6. By the Tenant in Scotland who shall have improved not less than ten acres within a similar period—The Minor Gold Medal. To be lodged by 1st November in any year.

Reports in competition for Nos. 5 and 6 must state the particular mode of management adopted, the substances applied, the elevation and nature of the soil, its previous natural products, and the changes produced.

SECTION 3.—HIGHLAND INDUSTRIES AND FISHERIES.

FOR APPROVED REPORTS.

1. The best mode of treating native Wool; cleaning, carding, dyeing, spinning, knitting, and weaving by hand in the Highlands and Islands of Scotland—Five Sovereigns. To be lodged by 1st November in any year.

SECTION 4.—MACHINERY.

FOR APPROVED REPORTS.

To be lodged by 1st November in any year.

SECTION 5.—FORESTRY DEPARTMENT.

FOR APPROVED REPORTS.

1. On Plantations of not less than eight years' standing formed on deep peat-bog—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The premium is strictly applicable to deep peat or flow moss; the condition of the moss previous to planting, as well as at the date of the Report, should, if possible, be stated.

The Report must describe the mode and extent of the drainage, and the effect it has had in subsiding the moss—the trenching, levelling, or other preliminary operations that may have been performed on the surface—the mode of planting—kinds, sizes, and number of trees planted per acre—and their relative progress and value, as compared with plantations of a similar age and description grown on other soils in the vicinity.

CLASS II.

DISTRICT COMPETITIONS.

REGULATIONS, 1928.

Grants in aid of DISTRICT COMPETITIONS for 1929 must be applied for before 1st November 1928, on Forms to be obtained from the Secretary.

When a Money Grant has expired, the District cannot apply again for another Money Grant for four years.

1. GRANTS TO DISTRICT SOCIETIES FOR HORSES, CATTLE, SHEEP, AND PIGS.

1. CLASS OF STOCK—LIMIT OF GRANTS, £340.—The Highland and Agricultural Society will make Grants to District Societies for prizes for *Breeding Animals* of any of the following Classes of Stock, viz. :—

<i>Cattle.</i>	<i>Sheep.</i>
Shorthorn.	Blackface.
Aberdeen-Angus.	Cheviot.
Galloway.	Border Leicester.
Belted Galloway.	Half-Bred.
Highland.	Shropshire.
Ayrshire.	Oxford-Down.
British-Friesian.	Suffolk.
Red Poll.	Wensleydale.
Jersey.	
Shetland.	<i>Pigs.</i>
<i>Horses.</i>	Any Pure Breed.
Draught Horses.	
Hunters.	
Hackneys.	
Ponies.	
Shetland Ponies.	

Cross-bred¹ animals are not eligible. The Prizes must be confined to *Breeding Animals*; "bullocks," "geldings," "wethers," and "hog pigs" are excluded.

2. All Competitions must be at the instance of a local Society. A Committee of Management shall be appointed, and the Convener of the Committee must be a Member of the Highland and Agricultural Society.

3. GRANT TO DISTRICT, £12.—The portion of the Grant to any one District Society shall not exceed the sum of £12 in any one year.

4. ALLOCATION OF GRANT.—The Grant from the Highland and Agricultural Society is not to be applied as a Grant in aid of the Premiums offered by the Local Society, but must be offered in the form of separate Prizes for the Animals chosen; and the Prizes must be announced in the Premium List and Catalogue of the Show as "given by the Highland and Agricultural Society."

¹ *Exceptions to this rule may, however, be authorised by the Board of Directors, on application. The Directors are prepared to consider applications from local Societies which desire to use their grants, or part thereof, as prizes for cross-bred calves and one-year-old cross-bred cattle.*

5. **CONTINUANCE OF GRANT—THREE YEARS.**—The Money Grant shall continue for three alternate years, provided always that the District Society shall, in the two intermediate years, continue the competition by offering Premiums for the same class of Stock as that selected in each previous year to compete for the Highland and Agricultural Society's Prizes. If no competition takes place for two years the Grant expires.

6. When it is agreed to hold the General Show of the Society in any district, no provincial show shall be held in that district in the **three months** immediately preceding the date of the General Show.

7. **MEDALS IN INTERMEDIATE YEARS.**—In the two alternate years the Highland and Agricultural Society will place three Silver Medals at the disposal of the District Societies, for the same classes of Stock as those for which the Money Premiums are offered, provided that not less than three lots are exhibited in the same class.

8. **RULES OF COMPETITION.**—The Rules of Competition for the Premiums, the Funds for which are derived from Grants of the Highland and Agricultural Society, shall be such as are generally enforced by the Society receiving the Grant for Premiums offered by itself.

9. **AREA AND PARISHES—FIVE PARISHES.**—When making application for Grants from the Highland and Agricultural Society, the District Society must delineate the area and the number of parishes comprised in the district, and, *except in special cases*, no District Society shall be entitled to a Grant whose show is not open to at least *five* Parishes.

10. **REPORTS.**—Blank Forms for Reports will be furnished to the Secretaries of the different District Societies. Both in the years when the Grant is offered and in the **two intermediate years**, detailed reports of the competition must be given on these Forms and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than **1st November**. These reports are subject to the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. All Reports must be signed and certified as marked in the Form. The Grant will lapse if no Report is lodged.

11. **GRANTS—WHEN PAID.**—The Grants made to District Societies will be paid in December after the Reports of the awards of the prizes have been received and found to be in order and passed by the Board of Directors, the Money Grants being paid to the Secretaries of the Local Societies and the Medals sent direct to the winners. *The Secretary of the District Society must not on any condition whatever pay any premium offered by the Highland and Agricultural Society until he has been informed that the awards are in order and has received the Grant from the Highland and Agricultural Society.*

12. **RENEWAL OF APPLICATION.**—No application for renewal of a Money Grant to a District Society will be entertained until the expiration of *four years* from the termination of the last Grant.

13. **DISPOSAL OF APPLICATIONS.**—In disposing of applications for District Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those District Societies which have been longest off the list.

DISTRICTS.

Final Year.

1. **AIRD AND STRATHGLASS AGRICULTURAL, HORTICULTURAL, AND INDUSTRIAL SOCIETY.**—*Convener*, K. P. MacGillivray, Kirkton, Bunchrew, Inverness; *Secretary*, John Campbell, Commercial Bank of Scotland, Beauly. Granted 1921. (In abeyance 1923, on account of Inverness Show.) (In abeyance 1925 and 1927—no Shows held.)

2. LOCHABER AGRICULTURAL SOCIETY.—*Convener*, Colonel A. W. MacDonald, Blarour, Spean Bridge; *Secretary*, Alistair MacDonald, Achintree, Fort-William. Granted 1924.

2nd Year.

3. LOWER WARD OF RENFREWSHIRE AGRICULTURAL SOCIETY.—*Convener*, Sir Hugh Shaw Stewart, Bart., C.B., of Ardgowan, Inverkip; *Secretary*, Arthur Murray, The Commercial Bank of Scotland, Limited, 22 West Blackhall Street, Greenock. Granted 1924. (In abeyance 1924 and 1927—no Shows held.)
4. GARRIOCH FARMERS' CLUB.—*Convener*, James Durno, Rothiebrisdane, Fyvie; *Secretary*, Alexander Watt, Cairnhill, Rothney, Inverurie. Granted 1925.
5. YTHANSIDE FARMERS' CLUB.—*Convener*, Alfred H. Reid, Hillhead, Ellon; *Secretary*, John Walker, Southside, The Square, Ellon. Granted 1925. (In abeyance 1927—not awarded.)
6. ARRAN FARMERS' SOCIETY.—*Convener*, James J. Morton, Machrie Farm, Isle of Arran; *Secretary*, R. W. Campbell, Bank House, Blackwaterfoot, Arran. Granted 1926.
7. BUTE AGRICULTURAL SOCIETY.—*Convener*, Charles Macfarlane, Cranslagmory, North Bute; *Secretary*, Dugald M'Alister, Bank of Scotland, Rothesay. Granted 1926.
8. CARRICK FARMERS' SOCIETY.—*Convener*, Thomas Smith, The Castle, Maybole; *Secretaries*, J. & J. M. Gibson, Royal Bank, Maybole. Granted 1926.
9. MULL AND MORVERN AGRICULTURAL SOCIETY.—*Convener*, J. H. Munro Mackenzie of Calgary, Calgary, Isle of Mull; *Secretary*, A. A. MacGilp, The Clydesdale Bank, Limited, Tobermory, Isle of Mull. Granted 1926.
10. STRATHDON AGRICULTURAL ASSOCIATION.—*Convener*, Charles Christie, Estates Office, Strathdon; *Secretary*, William M'Robert, Culfork, Strathdon. Granted 1926.
11. STRATHSPEY FARMERS' CLUB.—*Convener*, Peter Grant, Advie Mains, Advie; *Secretary*, John G. MacDougall, Dunolly, Grantown-on-Spey. Granted 1926.

1st Year.

12. ANNAN AND DISTRICT AGRICULTURAL SOCIETY.—*Convener*, John Roddick, Solicitor, Annan; *Secretary*, T. C. Boyd, Bank of Scotland House, Annan. Granted 1928.
13. BATHGATE AGRICULTURAL ASSOCIATION.—*Convener*, James W. Adamson, The Inch, Bathgate; *Interim Secretary*, William Wood, National Bank Buildings, Bathgate. Granted 1928.
14. DALBEATTIE AGRICULTURAL SOCIETY.—*Convener*, Major Wellwood Maxwell of Kirkennan, Dalbeattie; *Secretary*, J. E. Milligan, The Clydesdale Bank, Dalbeattie. Granted 1928.
15. MEIKLEOUR SPORTS AND SHOW SOCIETY.—*Convener*, David Fernie, Lochside, Coupar-Angus; *Secretary*, John Leggat, Meikleour, Perthshire. Granted 1928.
16. MOFFAT AND UPPER ANNANDALE AGRICULTURAL AND HORTICULTURAL SOCIETY.—*Convener*, J. Roy Henderson, Capplegill, Moffat; *Secretary*, George E. Bruges, Middlegill, Moffat. Granted 1928.
17. ROSS-SHIRE CROFTERS' SHOW CLUB.—*Convener*, Lieut.-Colonel Thomas W. Cathbert, C.M.G., D.S.O., Achindunie, Alness; *Secretary*, S. Campbell, Commercial Bank, Alness. Granted 1928.

(In Intermediate Year—3 Silver Medals.)

18. WEST TEVIOTDALE AGRICULTURAL SOCIETY.—*Convener*, E. D. Paton, Braehead, St Boswells; *Secretary*, W. S. Nichol, Wilton Bank, Hawick. Granted 1924. (No competition 1925.)
19. DEESIDE AGRICULTURAL ASSOCIATION.—*Convener*, David Anderson, Wester Durris, Drumoak; *Secretary*, Robert Adam, 6 Bon-Accord Square, Aberdeen. Granted 1925.
20. EAST OF FIFE AGRICULTURAL SOCIETY.—*Convener*, James Cairns, Abercrombie, St Monance; *Secretary*, George R. Dingwall, Colinsburgh. Granted 1925.
21. ST MARY'S ISLE ESTATES AND DISTRICT AGRICULTURAL SOCIETY.—*Convener*, W. P. Gilmour, Balmangan, Kirkcudbright; *Secretaries*, Messrs Gibson & Montgomery, Solicitors, Kirkcudbright. Granted 1925.
22. UNITED EAST LOTHIAN AGRICULTURAL SOCIETY.—*Convener*, Thomas Elder of Stevenson, Haddington; *Secretary*, William Burnet, Solicitor, Haddington. Granted 1926. (In abeyance 1927, on account of Edinburgh Show.)
23. ARDOCH AGRICULTURAL SOCIETY.—*Convener*, John Wood, Townhead, Braco; *Secretary*, James Forbes, Al Arish, Braco. Granted 1927.
24. BERWICKSHIRE AGRICULTURAL ASSOCIATION.—*Convener*, Thomas A. Swan, Lanark Lodge, Duns; *Secretary*, William Wright, Terrace Lodge, Langton, Duns. Granted 1927.
25. CLACKMANNANSHIRE UNION AGRICULTURAL SOCIETY.—*Convener*, John W. Prentice, Craigrie, Clackmannan; *Secretary*, Robert M'Gee, Blackfaulds, Alloa. Granted 1927.
26. GLENKENS AGRICULTURAL SOCIETY.—*Acting Convener*, Sydney C. Bristowe, Craig, Balmaclellan; *Secretary*, J. M. Garmory, Pomona Terrace, New Galloway. Granted 1927.
27. ISLAY, JURA AND COLONSAY AGRICULTURAL ASSOCIATION.—*Convener*, Hugh Morrison, M.P., of Islay, Islay; *Secretary*, Iain M. Mactaggart, Royal Bank Buildings, Bowmore, Islay. Granted 1927.
28. STRATHBOGIE FARMERS' CLUB.—*Convener*, Alexander Simpson, Broadland, Cairnie, Aberdeenshire; *Secretary*, Alexander P. Brown, 19 Richmond Road, Huntly. Granted 1927.
29. STRATHEARN AGRICULTURAL SOCIETY.—*Convener*, Peter M'Intyre, J.P., Tighnablaair, Comrie; *Secretary*, Mark Aitken, 1 Coldwells Road, Crieff. Granted 1927.

In abeyance 1928.

30. INVERURIE AGRICULTURAL SOCIETY.—*Convener*, James Durno, Crichtie, Inverurie; *Secretary*, W. Gordon, Union Bank, Inverurie. Granted 1925.

In 1928.

Nos. 1 and 2 are in competition for the final year.

Nos. 3, 4, 5, 6, 7, 8, 9, 10, and 11 are in competition for the second year.

Nos. 12, 13, 14, 15, 16, and 17 are in competition for the first year.

Nos. 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, and 29 are in intermediate year and compete for local Premiums. (See Rules 5 and 7.)

No. 30 is in abeyance on account of the Aberdeen Show.

2. GRANTS TO HORSE ASSOCIATIONS, &c., FOR STALLIONS FOR AGRICULTURAL PURPOSES.

1. The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging Stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £210 in any one year.

2. The portion of the Grant to any one Association or Society shall not exceed the sum of £15 in any one year.

3. The Grant will be available only for Stallions which, for the year to which the Grant applies, are Registered in the Register of Certified Draught Stallions published by the Board of Agriculture. (For information regarding the Registration of Stallions, apply to the Secretary of the Ministry of Agriculture and Fisheries, 10 Whitehall Place, London, S.W.)

4. The Grant will continue for three years provided the Association receiving the Grant shall hire a Registered Stallion in the two intermediate years.

5. In the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

6. RULES 2 (Committee and Convener), 10 (Reports), 11 (Time of Payment), 12 (Renewal of Grant), and 13 (Disposal of Applications) applicable to Section 1, shall be applicable to this Section.

DISTRICTS.

Final Year.

1. CAITHNESS HORSE-BREEDING ASSOCIATION.—*Convener*, George King, Berrisdale R.S.O., Caithness; *Secretary*, A. G. Doull, Parish Council Office, Lybster, Caithness. Granted 1924.
2. CARSE AND DUNDEE DISTRICT STALLION SOCIETY.—*Convener*, John Murray, Balruddery Farm, Invergowrie; *Secretary*, Joseph Murray, Balruddery Farm, Invergowrie. Granted 1924.

2nd Year.

3. BUCHLYVIE AND VALE OF MENTEITH HORSE-BREEDING AND STOCK IMPROVEMENT SOCIETY, LIMITED.—*Convener* and *Secretary*, John Drysdale, 55 Colinton Road, Edinburgh. Granted 1926.
4. CENTRAL FORFARSHIRE HORSE-BREEDING SOCIETY.—*Convener*, James Scott, Ascurry, Letham, Forfar; *Secretary*, Walter R. Findlay, Ochterlony Mains, Guthrie. Granted 1926.
5. EAST MAINLAND CO-OPERATIVE HORSE-BREEDING SOCIETY, LIMITED.—*Convener*, Alexander Calder, Sebay, Tankerness, Kirkwall; *Secretary*, David J. Laughton, Castle, Quoyburray, Kirkwall. Granted 1926.

1st Year.

6. SOUTH DEESIDE STOCK IMPROVEMENT SOCIETY.—*Convener*, George Jamieson, Burnside, Netherly, Stonehaven; *Secretary*, John Duncan, Craiglug Cottage, Durris. Granted 1928.

Intermediate Year—Grant in Abeyance.

7. CROMER AND UPPER DEESIDE HEAVY HORSE-BREEDING SOCIETY.—
Convener, William Hunter, Old Town of Kincraigie, Tarland; *Secretary*, Duncan Reid, Craskins, Tarland. Granted 1925.
8. EAST LOTHIAN CLYDESDALE HORSE-BREEDING SOCIETY.— *Convener*, Charles H. Beveridge, Elphinstone Tower, Tranent; *Secretary*, W. Burnet, Solicitor, Haddington. Granted 1927.
9. KIRRIEMUIR DISTRICT AGRICULTURAL ASSOCIATION.—*Convener*, Oliver Turnbull, Baldoukie, Forfar; *Secretary*, M. B. Wallace, National Bank, Kirriemuir. Granted 1927.
10. ORKNEY WEST MAINLAND HORSE-BREEDING SOCIETY.— *Convener*, William Corrigan, North Bigging, Harray, Kirkwall; *Secretary*, John G. S. Flett, Nistaben, Harray, Kirkwall. Granted 1927.

In 1928.

- Nos. 1 and 2 are in competition for the final year.
 Nos. 3, 4, and 5 are in competition for the second year.
 No. 6 is in competition for the first year.
 Nos. 7, 8, 9, and 10 are in abeyance, and compete for local Premiums.
 (See Rule 4.)

3. MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

The Society, being anxious to co-operate with local Associations, will give a limited number of Silver Medals annually to Societies, not on the list of Cattle, Horse, or Sheep Premiums, in addition to the Money Premiums awarded in the Districts, for—

1. Best Bull, Cow, or Heifer of any pure breed included in Section 1.
2. Best Stallion or Mare of any pure breed included in Section 1.
3. Best Tup or Pen of Ewes of any pure breed included in Section 1.
4. Best Boar, Sow, or Breeding-Pig of any pure breed.
5. Best Pens of Poultry.
6. Best Sample of any variety of Wool.
7. Best Sample of any variety of Seeds.
8. Best managed Farm.
9. Best managed Green Crop.
10. Best managed Hay Crop.
11. Best managed Dairy.
12. Best Sweet-Milk Cheese.
13. Best Cured Butter.
14. Best Fresh Butter.
15. Best collection of Roots.
16. Best kept Fences.
17. Best Sheep-Shearer.
18. Most expert Hedge-Cutter.
19. Most expert Labourer at Draining.
20. Best Maker of Oat-Cakes.

It is left to the local Society to choose out of the foregoing list the classes for which the Medals are to be competed.

The Medals are granted for two years, and lapse if not awarded in those years.

No Society shall receive more than two Medals in any year.

Aberdeenshire.

1. VALE OF ALFORD AGRICULTURAL ASSOCIATION.—*Convener*, The Right Hon. Lord Forbes, Castle Forbes, Keig ; *Secretary*, Robert S. Law, New Keig, Keig. Granted 1928.

Dumbartonshire.

2. CUMBERNAULD AGRICULTURAL SOCIETY.—*Convener*, Thomas Duncan, Wester Dullatur, Dullatur ; *Secretary*, John Longwill, Parish Council Chambers, Cumbernauld. Granted 1928.

Fifeshire.

3. FIFE AGRICULTURAL SOCIETY.—*Conveners*, John Stewart of Struthers, J.P., Woodbourne House, Ceres, and Alexander Niven of Collairnie, Ladybank ; *Secretary*, F. W. Christie, Eden View, Cupar-Fife. Granted 1927.

Orkney.

4. SHAPINSAY AGRICULTURAL SOCIETY.—*Convener*, William T. Wood, Balfour Mains, Shapinsay, Orkney ; *Secretary*, D. L. Kemp, Gatehouse Shapinsay, Orkney. Granted 1927.

Perthshire.

5. MOULIN AGRICULTURAL ASSOCIATION.—*Convener and Secretary*, Robert M'Gillewie, Broomhill, Pitlochry. Granted 1927.

Renfrewshire.

6. LOCHWINNOCH AGRICULTURAL SOCIETY.—*Convener*, Andrew Clark, Barnaigh, Lochwinnoch ; *Secretary*, John Reid, National Bank Buildings, Johnstone. Granted 1928.

Sutherlandshire.

7. KINCARDINE AND CREICH AGRICULTURAL SOCIETY.—*Convener*, Sir Robert W. Brook, Bart., of Midfearn, Fearn Lodge, Ardgay ; *Secretary*, D. Munro, Bank of Scotland House, Bonar Bridge. Granted 1925. (In abeyance 1925—not awarded, and 1927—no Show.)

Applications from other Districts must be lodged with the Secretary of the Society by 1st November next.

RULES OF COMPETITION.

1. All Competitions must be at the instance of a local Society.
2. The classes for which Medals are granted must be in accordance with the list at page 63. The Committee shall select the classes, and specify them in the Report.
3. A Committee of Management shall be appointed, and the Convener of the Committee must be a Member of the Highland and Agricultural Society.

4. The Money Premiums given in the District must be not less than £2 for each Medal claimed.
5. The Medal for Sheep-Shearing shall always accompany the highest Money Premium.
6. There must not be fewer than three competitors in all the classes.
7. Regarding Reports, despatch of Medals, and application for renewal of Grant, Rules 10 and 11, Section 1, will apply.
8. When a grant of Medals has expired, the District cannot apply again for Medals for two years.

4. SPECIAL GRANTS.

ANNUAL.

- £20 to the Ayrshire Agricultural Association, to be competed for at the Dairy Produce Show at Kilmarnock.—*Chairman of Directors*, Lieut.-Colonel W. T. R. Houldsworth of Kirkbride, Maybole; *Secretary*, John Howie, 58 Alloway Street, Ayr. Granted 1872. (No competition 1914, 1915, 1916, 1917, 1918, and 1919.)
- £15 to the Northern Arts and Crafts Society.—*Convener*, Miss G. H. Macintosh, Raigmore, Inverness; *Joint-Secretaries*, Mrs Mitford, Berryfield, Lentrane, and Miss Mary Mackintosh, Raigmore, Inverness. Granted 1922. (In abeyance 1923—no competition.)
- The British Dairymaids' Association.—*Convener*, Miss A. C. Spier, 52 Brownside Road, Cambuslang, Glasgow; *Secretary*, Miss J. Macdonald, 16 Rutland Square, Edinburgh. 1 Minor Gold Medal and 1 Medium Silver Medal for Champion Butter-making Competitions. Granted 1908. (In abeyance 1914, 1915, 1916, 1917, 1918, and 1923—no competition.)
- The Scottish National Union of Allotment Holders.—*Secretary*, Archibald W. Fisher, 18 Hill Street, Edinburgh. £8 and 8 Medium Silver Medals for best Allotments.
- The North of Scotland College of Agriculture.—*Secretary*, A. A. Prosser. 3 Silver Medals (1 Large, 1 Medium, and 1 Minor)—1st, 2nd, and 3rd Prizes respectively—for Stackyard Competition (*Sir John Fleming Cup* Competition). Granted 1925.

IN ALTERNATE YEARS.—GRANTS IN 1928.

- £3 to Rousay Agricultural Society, Orkney.—*Convener*, James Johnston, Trumland, Rousay, Orkney; *Secretary*, John Harold, Springfield, Rousay, Orkney. Granted 1903. (No Show 1915, 1916, 1917, or 1918.)
- £3 to South Ronaldshay and Burray Agricultural Society, Orkney.—*Convener*, John Tomison, Halcro, South Ronaldshay, Orkney; *Secretary*, George Esson, St Margaret's Hope, Orkney. Granted 1904. (In abeyance 1917 and 1918—no Show held.)
- £3 to South Uist Cattle Show Society.—*Secretary*, David Ritchie, The Commercial Bank of Scotland, Lochboisdale, South Uist. Granted 1928 (for one year).

GRANTS IN ABEYANCE, 1928.

- £3 to Orkney Agricultural Society.—*Convener*, William T. Wood, Balfour Mains, Shapinsay, Orkney; *Secretary*, D. B. Peace, jun., 4 Old Scapa Road, Kirkwall, Orkney. Granted 1883. (No Show in 1915, 1916, 1917, and 1918.)

- £3 to Sanday Agricultural Society, Orkney.—*Convener*, W. Cowper Ward, Scar House, Sanday, Orkney; *Secretary*, James Cromarty, Elness, Sanday, Orkney. Granted 1902. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)
- £3 to East Mainland Agricultural Society, Orkney.—*Convener*, James G. Skea, Barns of Ayre, Deerness, Orkney; *Secretary*, David J. Laughton, Castle, Quoyburray, Kirkwall, Orkney. Granted 1898. (In abeyance 1917 and 1918—no Show held.)
- £3 to West Mainland Agricultural Society, Orkney.—*Convener*, James M. H. Robertson, Lyking, Sandwick, Stromness, Orkney; *Secretary*, James Wood, Skail Farm, Sandwick, Stromness, Orkney. Granted 1900. (No Show 1916, 1917, or 1918.)

5 SCOTTISH WOMEN'S RURAL INSTITUTES.

A sum not exceeding £100 in each year will be given in special grants to Federations of Scottish Women's Rural Institutes. The amount of any one grant shall not exceed £10. Any Federation which has received a grant for two consecutive years shall not be eligible to again apply until after the expiry of two years.

- East Lothian Federation of Scottish Women's Rural Institutes.—*Convener*, Miss C. M. Tunnard, Tynninghame, Prestonkirk, East Lothian; *Secretary*, Miss J. N. Tweedie, Eweford, Dunbar. Granted 1926. (No Exhibition 1927.)
- Ayrshire Federation of Scottish Women's Rural Institutes.—*Convener*, Mrs Arthur, Rosemount, Monkton; *Secretary*, Mrs Pollock, M.A., 2 Loanhead Street, Kilmarnock. Granted 1927.
- Banffshire Federation of Scottish Women's Rural Institutes.—*Convener*, G. Petrie Hay, 45 Moss Street, Keith; *Secretary*, Miss Isabel M. Watt, 6 Burns Square, Buckie. Granted 1927.
- Isle of Arran Federation of Scottish Women's Rural Institutes.—*Convener*, Her Grace The Duchess of Montrose, Brodick Castle, Brodick; *Secretary*, Mrs Mary Stewart Orr, Corrie House, Corrie. Granted 1927.
- Midlothian Federation of Scottish Women's Rural Institutes.—*President*, Mrs Stuart, Borthwick Castle, Gorebridge; *Secretary*, Miss N. Scott Muir, 7 Barnton Gardens, Davidson's Mains. Granted 1927.
- Stirlingshire and West Perthshire Federation of Scottish Women's Rural Institutes.—*President*, Mrs Macdiarmid, Oakbank, Kippen; *Secretary*, Miss K. R. Cowie, U.F. Manse, Buchlyvie. Granted 1927.
- Dumfriesshire Federation of Scottish Women's Rural Institutes.—*Convener*, Mrs Alice Maitland Heriot, Whitecroft, Ruthwell; *Secretary*, Mrs Helen Ralston, Dabton, Thornhill. Granted 1928.
- Fife Federation of Scottish Women's Rural Institutes.—*President*, Mrs Evelyn V. Baxter, The Grove, Upper Largo; *Secretaries*, Mrs Gaskell, Balchristie, Colinsburgh, and Mrs B. Lilburn, Craigforth Elie. Granted 1928.
- Forfarshire County Federation of Scottish Women's Rural Institutes.—*Convener*, Mrs Anne Arnot Babington, The Manse, Glamis; *Secretary*, Mrs E. B. Soutar, Clive House, Letham. Granted 1928.
- Peeblesshire Federation of Scottish Women's Rural Institutes.—*Convener*, Mrs R. O. Ainslie, Stobo; *Secretary*, Mrs P. A. B. Thomson, Kaimas, West Linton. Granted 1928.
- Selkirkshire Federation of Scottish Women's Rural Institutes.—*Convener*, Mrs D. S. Meach, Hangingshaw, Selkirk; *Secretary*, Mrs Agnes J. Macgown, Fairholm, Ettrick. Granted 1928.

CLASS III.

PLOUGHING, HOEING, AND LONG SERVICE.

1. PLOUGHING COMPETITIONS.

The Ploughing Medal will be given to the winner of the first Premium at Ploughing Competitions, provided a Report in the following terms on the official form is made to the Secretary, within one month of the Competition, by a Member of the Society. Forms of Report to be had on application.

FORM OF REPORT.

I, _____ of _____, Member of the Highland and Agricultural Society, hereby certify that I attended the Ploughing Match of the _____ Association at _____ in the county of _____ on the _____ when _____ ploughs competed ; _____ of land were assigned to each, and _____ hours were allowed for the execution of the work. The sum of £ _____ was awarded in the following proportions, viz. :—

[Here enumerates the names and designations of successful Competitors.]

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Ploughing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.
2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society, 3 George IV. Bridge, Edinburgh.
3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.
4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.
5. A Member can report only one Match ; and a Ploughman cannot carry more than three Medals in the same season.
6. To warrant the grant of the Medal there must have been twelve ploughs in Competition, and not less than Three Pounds awarded in Prizes by the local Society. The Medal to be given to the winner of the first prize.
7. The Local Society or Ploughing Association shall decide what class of ploughs shall compete for the Medal, and if so agreed, may offer it for competition to the class of plough most generally in use in the district.
8. The Local Society or Committee may, if they desire, arrange to let each Ploughman have one person to guide the horses for the first two and the last two furrows, but in no case shall Ploughmen receive any other assistance, and their work must not be set up or touched by others. Attention should be given to the firmness and sufficiency of the work below, more than to its neatness above the surface.

9. The Local Committee is required to fix the time to be allowed for ploughing the portion of land, and they are recommended that the time be at the rate of not more than ten hours per imperial acre on light land, and fourteen hours on heavy or stony land.

NOTE.—The attention of the Directors of the Society has frequently been drawn to certain irregularities which have occurred in connection with the conduct of Ploughing Matches and the completion of the Reports thereon. Complaints have been made (a) that the allotted amount of ground has not been ploughed, within the specified time, by the competitor awarded the first prize; (b) that the Report sent to this Society has been signed by a Member of the Society who was not present at the Match. It has to be pointed out that any infringement of the above Rules by a Local Society or Ploughing Association will render that Society or Association liable, at the discretion of the Board of Directors, to be debarred from receiving the Society's Medals in future.

2. HOEING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first Premium at Hoeing Competitions, provided a Report in the following terms on the official form is made to the Secretary within a month of the Competition by a Member of the Society. Forms of Report to be had on application.

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Hoeing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society, No. 3 George IV. Bridge, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can only report one Match; and same Competitor cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve hoes in Competition, and not less than Three Pounds awarded in prizes by the local Society. The Medal to be given to the winner of the first prize.

7. The time to be allowed to be decided by the local Committee, but in no case to exceed two hours for two drills of 100 yards each, the third drill being unoccupied, so that Competitors do not interfere with their neighbour's work.

8. Competitors must finish their work as they go along—no turning back or after-dressing allowed. Handpicking or transplanting shall be strictly prohibited.

9. A Committee shall be appointed to watch the work, and any Competitor found transplanting or otherwise not complying with the Rules shall have his number withdrawn, and be debarred from receiving any prize which might otherwise have been awarded to him.

NOTE.—Medals will be awarded under similar conditions for Competitions in hand-singling.

3. LONG-SERVICE CERTIFICATES AND MEDALS.

Certificates and Silver Medals for long service are awarded by the Society to farm servants, male or female, having an approved service in Scotland of not less than thirty years—(a) with one employer on the same or different holdings; (b) on the same holding with different employers. Special Certificates and Gold Medals are also awarded to farm servants, male or female, having an approved service in Scotland of not less than forty-five years, on similar conditions of employment as the above. These Certificates and Medals will be issued as applications are received.

Forms to be obtained from the Secretary.

War Service to count towards the time required for qualification where farm servants have returned to same service or employment with same farmer or his family.

Estate workers, such as Foresters, Carters, Grooms, &c., are not eligible. The award is strictly confined to Farm workers, such as Ploughmen, Shepherds, &c.

CLASS IV.

COTTAGES AND GARDENS.

The following Premiums are offered for Competition in the Parishes after-mentioned.

The Premiums are granted for two years.

1. PREMIUMS FOR BEST KEPT COTTAGES AND GARDENS.

1. Best kept Cottage	.	.	.	.	.	£1 0 0
Second best	.	.	.	.	.	0 10 0
2. Best kept Cottage Garden	.	.	.	.	.	1 0 0
Second best	.	.	.	.	.	0 10 0

RULES OF COMPETITION.

1. Competitions may take place in the different parishes for Cottages and Gardens, or for either separately.

2. The occupiers of Lodges at Gentlemen's Approach Gates and Gardeners' Houses are excluded, as well as others whom the Committee consider, from their position, not to be entitled to compete. The inspection must be completed by the 1st of October. In making the inspection, the Conveners may take the assistance of any competent judges.

3. It shall be left to the Committee of the District to fix two grades of Cottages, with maximum rents of £6 and £15 respectively, and to apply for £3 Grants in respect of each.

4. To warrant the award of full Premiums, there must not be fewer than

three competitors in each class. If there are less than three competitors in each class, only half Premium will be awarded.

5. A person who has gained the highest Premium cannot compete again.

6. If the Cottage is occupied by the proprietor, the roof must be in good repair; if the roof is thatch, it must be in good repair, though in the occupation of a tenant. The interior and external conveniences must be clean and orderly; the windows must be free of broken glass, clean, and affording the means of ventilation. Dunghills, and all other nuisances, must be removed from the front and gables. In awarding the Cottage Premiums, preference will be given to Competitors who, in addition to the above requisites, have displayed the greatest taste in ornamenting the exterior of their houses, and the ground in front and at the gables.

7. In estimating the claims for the Garden Premiums, the judges should have in view—the sufficiency and neatness of the fences and walks; the cleanness of the ground; the quality and choice of the crops; and the general productiveness of the garden.

8. Reports, stating the number of Competitors, the names of successful parties, and the nature of the exertions which have been made by them, must be lodged with the Secretary of the Highland and Agricultural Society *on or before the 1st November next*.

9. When a grant of Money has expired, the District cannot apply again for aid for four years.

Parishes desirous of these Premiums must lodge applications with the Secretary *on or before the 1st November next*.

(No Money Grants offered in 1928.)

2. MEDALS FOR COTTAGES AND GARDENS, OR GARDEN PRODUCE, POULTRY, AND BEE-KEEPING.

1. The Society will give annually one or two Minor Silver Medals to a limited number of local Associations or individuals, who establish Competitions and Premiums for Cottages, Gardens, Garden Produce, or Bee-Keeping. The Medals will be granted for two years.

2. The Medals may be offered in any two of the following sections, *but under no circumstances will the two Medals be given in one of the sections* :—

(1) Best kept Cottage or best kept Cottage and Garden. (One Medal only.)

(2) Best kept Garden. (One Medal only.)

(3) Best Collection of Garden Produce—Flowers excluded. (One Medal only.)

(4) Best Pen of Poultry.

(5) Honey. (One Medal only.)

3. The annual value of each Cottage, with the ground occupied in the parish by a Competitor, must not exceed £20. The occupiers of Lodges at Gentlemen's Approach Gates, and Gardeners in the employment of others, are not entitled to compete.

4. If Competition takes place for Garden Produce, such produce must be *bona fide* grown in the Exhibitor's Garden. He will not be allowed to make up a collection from any other Garden. The produce must consist of Vegetables, or Vegetables and Fruit (not Fruit alone). Flowers are excluded.

5. The Honey must be the produce of the Exhibitor's own Hives.

6. To warrant the award of a Medal, there must not be fewer than three Competitors.

7. Blank forms for Reports of Competitions will be furnished to the Secretaries of the different Districts. These must, in all details, be completed and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than *1st November*, for the approval of the Directors, against whose decisions there shall be no appeal.

8. When a grant of Medals has expired, the District cannot apply again for aid for two years, and if no competition takes place in a District for two years the grant expires.

9. Applications for these Medals must be made *before 1st November next*.

1. Kirkcaldy and District Horticultural Society.—*Convener*, D. M'Lean, Raith Gardens, Kirkcaldy; *Secretary*, Peter Reid, 6 Bank Street, Kirkcaldy. Granted 1927.

FIRST EDITION.]

NOTE.—From 18th to 26th July all communications should be addressed to “The Secretary, Secretary’s Office, Showyard, The Links, Aberdeen.”

*Address for Telegrams—“SOCIETY,” EDINBURGH.
Telephone No.—EDINBURGH 23655.*

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

GENERAL SHOW OF STOCK, IMPLEMENTS AND MACHINERY

ABERDEEN

24TH, 25TH, 26TH, AND 27TH JULY 1928.

LAST DAYS OF ENTRY.

IMPLEMENTS AND OTHER ARTICLES—Monday, 7th May.

CATTLE, HORSES, SHEEP, GOATS, AND PIGS—Thursday, 31st May.
(*Separate Form for EACH Entry.*)

POULTRY, DAIRY PRODUCE, WOOL, RURAL INDUSTRIES, AND HORSE-SHOEING—Thursday, 31st May.

RABBITS AND HONEY—Thursday, 21st June.

STOCK JUDGING COMPETITION—Tuesday, 10th July.

No Entry at ordinary fees taken later than those which are received at the Society’s Office, Edinburgh, by first post, or 10 o’clock, on Friday morning, 1st June. Late Entries for Cattle, Horses, Sheep, Goats, and Pigs taken on payment of 10s. additional for each entry (Poultry, Dairy Produce, Wool, Rural Industries, and Horse-shoeing at double fees) till 10 o’clock on Wednesday morning, 6th June, at the Society’s Office, Edinburgh.

President of the Society.

THE MARQUESS OF ABERDEEN AND TEMAIR, K.T.

Chairman of the Board of Directors.

JAMES M’ILAREN, CORNTON, BRIDGE OF ALLAN.

Convener of the Local Committee.

FALCONER L. WALLACE OF CANDACRAIG AND BALCAIRN, STRATHDON.

The District connected with the Show comprises the Counties of Aberdeen, Banff, Forfar (Eastern District), and Kincardine.

REGULATIONS.

GENERAL CONDITIONS.

1. The Competition, except where otherwise stated in the Premium List, is open to Exhibitors from all parts of Great Britain, Northern Ireland, and Irish Free State.

Entries.

2. Every Lot must be intimated by a Certificate of Entry, lodged with the Secretary *not later than Monday, 7th May, for Implements and other Articles; Thursday, 31st May, for Stock, Poultry, Dairy Produce, Wool, Rural Industries, and Horse-shoeing; Thursday, 21st June, for Rabbits and Honey, and Tuesday, 10th July, for Stock-Judging Competition.* No Entry taken at ordinary fees later than those which are received at the Society's Office by first post, or 10 o'clock, on Friday morning, 1st June. Late Entries for Cattle, Horses, Sheep, Goats, and Pigs taken on payment of 10s. additional for each entry (Poultry, Dairy Produce, Wool, Rural Industries, and Horse-shoeing at double fees) till 10 o'clock Wednesday morning (6th June), at the Society's Office, Edinburgh. Printed forms of Entry will be issued on application to the Secretary, No. 3 George IV. Bridge, Edinburgh. Admission Orders for Exhibits and Attendants will be forwarded to Exhibitors, by post, previous to the Show.

Between 31st May and 21st June an Exhibitor who has made, in due time, an entry of Horses, Cattle, Sheep, Goats or Pigs, in a particular class, will be permitted to substitute for it an entry of another animal in the *same class* on payment of a fee of Five Shillings per entry.

Licences for moving Stock.

3. This Premium List is published and the Show will be held subject to any Orders that may be issued by the Ministry of Agriculture or Local Authorities. Any licences that may be required for the movement of Stock into or away from the Show must be obtained by Exhibitors. For these licences application should be made to the Chief Constable, Aberdeen.

Diseased Animals.

4. Animals suffering from any form of infectious or contagious disease—including ringworm or other form of infectious or contagious skin ailment—must not be brought to the Show. Those infringing this Rule shall be liable to a fine of 40s., and to have their Stock removed.

Fees to accompany Entries.

5. No Entry can be received or recorded unless it is accompanied by the necessary fees, and complies fully with the Regulations in the Premium List, the Secretary being empowered to return entries sent without the necessary fees.

Particulars of Entries.

6. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor. The Society shall have power at any time to call upon an Exhibitor to furnish proof of the correctness of any statement in his entry.

Name of Breeder.

7. The name of the Breeder, if known, must be given, and if the Breeder is not known, a declaration to that effect, signed by the Exhibitor, must be made on the Entry Schedule, and no pedigree will be entered in the Catalogue when the Breeder is unknown.

No substitution of Animals.

8. All animals, except calves, foals, and lambs shown with their dams, must be entered in the classes applicable to them, and cannot be withdrawn after entry, or other animals be substituted in their place, except as provided in Rule 2 above.

One Class only.

9. For prizes given by the Society, no animal shall be allowed to compete in more than one class, or to compete in any class except that prescribed for animals of its pedigree and description; but this Rule does not apply to the Jumping and Harness Classes.

Ownership.

10. All stock exhibited at the Show, except where otherwise stated in the Premium List, must be, at the time of entry, the *bona fide* property of the Exhibitor in whose name it is entered.

Responsibility for Entries.

11. Exhibitors are alone responsible for the accuracy and eligibility of their entries. The recording of an entry or the admission of the exhibit to the Showyard will not relieve the Exhibitor of this responsibility. The entry-fee paid for an animal entered in a class for which it is not eligible is not returnable.

12. In the event of the entries in any section of Cattle, Horses, Sheep, Goats, or Pigs being less in number than an average of three per class, or the number of different Exhibitors in the section being less than three, the classes for that section shall be cancelled automatically for the year, and the entry fees returned. *Cancelling of Entries.*

13. The Society shall not be liable for any loss or damage which Stock, Poultry, Dairy Produce, &c., Implements, or other articles may sustain at the Show, or in transit. *Society not liable.*

14. The Society reserve to themselves the right of refusing, cancelling, or prohibiting the exhibition of entries from any person who, after 1st January 1904, has been expelled from the membership of any Agricultural or Dairy Society, or who may have been prohibited, suspended, or disqualified from making entries or exhibiting at the Show or Shows of any Agricultural or Dairy Society or Breed Society in consequence of having attempted to obtain a Prize by giving a false Certificate, or by other unfair means, or who is under exclusion from any Breed Society for fraudulent practices. *Disqualified Exhibitors.*

15. When an animal has previously been disqualified by the decision of any Agricultural or Breed Society in the United Kingdom, such disqualification shall attach, if the Exhibitor, being aware of the disqualification, fail to state it, and the grounds thereof, in his entry, to enable the Directors to judge of its validity. *Animal Disqualified.*

16. Any artificial contrivance or device of any description found on or proved to have been used on an animal, either for preventing the flow of milk or for any other improper purpose, will disqualify that animal from being awarded a Premium, and the Owner of said animal may be prohibited from again entering Stock for any of the Society's General Shows, for such a period as the Directors may see fit. *Tampering with Animals.*

17. Horses shall not be blindfolded while being shown in the Ring.

18. The Society further reserve to themselves the right of refusing any entries they may think fit to exclude, or to cancel any entry made, or to prohibit the exhibition of any entry. *Blindfolding Horses. Rejecting Entries.*

19. Stock entered for competition, and actually in the Show, is subject to the control and under the orders of the Stewards, Secretary, and other Show officials of the Society, and such stock may not be withdrawn from competition without the consent of the Stewards or Secretary. *Control of Exhibits.*

20. Persons making insulting remarks to, or in any way unduly interfering with, the Judges, Stewards, or other officials while in the performance of their duties, and all Exhibitors or others in charge of stock while in the judging rings refusing to accept or display tickets, rosettes, &c., awarded by the Judges, and handed to them by the Stewards or other officials, or tearing up tickets, rosettes, &c., so awarded and handed to them, or indulging in any similar conduct, shall be considered guilty of misconduct, and shall be dealt with under these rules. *Improper Conduct.*

21. All persons in charge of stock or other exhibits, and all persons admitted into the Showyard, shall be subject to the rules of the Society, and shall obey the orders of the Stewards, Secretary, and other officials of the Society. Exhibitors shall be answerable for the conduct of their servants or representatives. *Subject to Orders.*

The Stewards and other officials have power to enforce the regulations of the Society in their different departments. *Power of Officials.*

22. A protest having reference to exhibits at the Show may be lodged by any person having interest. Protests having reference to competitions which take place on the first day of the Show must be lodged in writing with the Secretary at his Office in the Showyard not later than 9 A.M. on Wednesday, the second day of the Show, and parties must be in attendance at the Secretary's Office in the Showyard at 9.30 A.M. that day, when protests may be disposed of. Protests relating to competitions taking place after the first day of the Show must be lodged before 5 P.M. on the day on which the particular exhibition *Protests.*

takes place. Each protest must state specifically the grounds of objection, and must be accompanied by a deposit of £2, 2s., which deposit may, if the objection be proved frivolous to the satisfaction of the Directors, be forfeited. Protests may be lodged at any time by Directors, and in this case no deposit will be required. Protests will be heard and determined by the Directors. Protests on veterinary grounds not received.

*Penalties
for
Offences.*

23. The violation of any one of the regulations, or disobedience of the orders of the Directors, Stewards, Secretary, or other officials of the Society, shall render the offending person liable to the forfeiture of all premiums awarded to him, or of such a portion as the Directors may ordain, and also liable to be expelled from the membership of the Society, and disqualified from again, or for a certain number of years, exhibiting at the Shows of the Society, or to have his case disposed of by fine or otherwise as the Directors may determine.

*Final
Authority.*

24. The decision of the Directors shall, in every matter arising at or in connection with the Show, be final; and every person present at the Show, whether as a Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have agreed to refer the subject-matter of such decision to the final determination of the Directors to the exclusion of all Courts of Law.

*Intimating
Decisions.*

25. All decisions under these rules may, along with the names and addresses of the persons against whom such decisions have been pronounced, be communicated by the Secretary of this Society to the Secretaries of all Agricultural or Dairy Societies holding open Shows in the United Kingdom, and to the Secretaries of all Breed Societies in the United Kingdom, and may be published in the Annual Reports of this Society, and in such newspapers or journals as the Directors may determine; and every Exhibitor competing at the Show, and every person present at the Show, whether as a Director, Member of Committee, Steward, Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have consented to such communication and publication.

*Former
Winners.*

26. An animal to which a first Premium has been awarded, even if it should not qualify for that Premium, or an animal which subsequently becomes entitled to a first Premium, at a General Show of the Society, cannot again compete in the same class, notwithstanding any alteration in the heights stated for such class, but may be exhibited as Extra Stock.

*Herd-
books.*

27. Shorthorn, Aberdeen-Angus, Galloway, Belted Galloway, Highland, British Friesian, and Red Poll cattle must be entered in the herd-books—Ayrshire Cattle in the herd-book or any Appendices thereto—or the Exhibitor must produce evidence that his animal is eligible to be entered therein.

*Height of
Horses.*

28. All Horses or Ponies entered in classes in which a particular height is stated shall, before being judged, be measured with their shoes on. No subsequent measuring or alteration of shoes will be permitted.

*Weight of
Shoes.*

29. Exhibitors of Hackney and Harness Horses shall be required to adhere to the Rules and Regulations of the Hackney Horse Society with regard to the weight of shoes on their exhibits, the Society's Veterinary Inspector being instructed to examine all the Hackneys and Harness Horses on the opening morning of the Show (this year on the Wednesday morning), and see that the following Rules as to the weight of shoes are attended to—viz., (a) For Hackneys exceeding 14 hands (except Hackney yearling colts and Hackney yearling fillies), no shoe (nails included) may exceed 2 lb. in weight; (b) for Ponies not exceeding 14 hands, Hackney yearling colts and Hackney yearling fillies, no shoe (nails included) may exceed 1½ lb. in weight.

*Overfeed-
ing.*

30. Breeding Stock must not be shown in an improper state of fatness, and the Judges are requested not to award Premiums to overfed animals; and no Cattle or Sheep which after the age of twelve months have been exhibited as Fat Stock at any Show are eligible to compete in the Breeding Classes for the Society's Prizes.

Sires.

31. Aged Bulls and Stallions must have had produce, and, along with

two-year-old Bulls, three-year-old Colts, and two-shear and aged Tups, have served within the twelve months immediately preceding the Show.

32. Except as may be otherwise specially provided in this Premium List, cows of all breeds (other than Ayrshire, British Friesian, and Red Poll) must have had a calf within nine months previous to the Show, and when exhibited must be in milk. Cows of the Ayrshire, British Friesian, and Red Poll breeds must have had a calf within fifteen months previous to the Show. *Calving Sows.* *Animals of any age that have had a calf must be shown as Cows.*

33. Two-year-old Heifers of the Shorthorn, Aberdeen-Angus, Galloway, Belted Galloway, British Friesian, and Red Poll breeds, two-year-old Yeld Ayrshire Heifers, and three-year-old Highland Heifers, must be in calf when exhibited, and the Premiums will be withheld till birth be certified, which must be within nine months after the Show. *In-calf Heifers.*

34. A Mare entered in a class for "Mares with foal at foot" must have produced a foal after 1st January of the year of the Show, must have regularly nursed her own or another foal, and must have the foal with her in the Show. If the mare's own foal is alive it must be the foal shown with the mare. In the case of a Mare that has not foaled before the Show, or whose foal has died, she shall, if not in milk, be eligible without further entry to compete among the Yeld Mares if a corresponding class for Yeld Mares be included in the Premium List. Draught Yeld Mares must produce a foal within twelve months from the first day of the Show. A Mare in a class for "Mares or Geldings" may or may not have had a foal in the year of the Show, but shall not have her foal exhibited with her, nor be in milk at the time of the Show. *Mares.*

35. All Sows born in or before 1926 must have produced a litter of pigs in the year of the Show before the opening day. Sows born between 1st January and 1st September 1927 must either have produced a litter of pigs before the Show, or produce a litter within three months of the last day of the Show. Certificates of the date of farrowing must be supplied in every case. *Sows.*

36. With reference to Regulation 33, birth of a live or full-time calf must be certified; and in regard to Regulation 34, birth of at least a nine months' foal; or in the case of the death of the dam, a Veterinary Surgeon's certificate must be produced certifying that at the time of death the animal was so far advanced with calf or foal that if it had lived it would have produced a calf or foal within the periods stated in Rules 33 and 34. Certificates required by the foregoing Regulations will be issued after the Show, and must reach the office of the Secretary as follows: calving certificates within ten months, farrowing certificates within four months, and foaling certificates within thirteen months, of the last day of the Show. In default of this, the animal will be regarded as having failed to fulfil the Regulations, and the prize will therefore pass to the animal next in order of merit or be forfeited. *Calves and Foals.* *Calving, Farrowing, and Foaling Certificates.*

37. Except when otherwise provided, the awards of Special Prizes shall not be subject to the Regulations as to calving and foaling. *Special Prizes.*

38. The Premiums awarded, except those withheld till birth of calf or foal or litter of pigs is certified, will be paid as soon after the Show as practicable, and, with the exception of the Tweeddale Gold Medal, Special Cups, and Medals, may be taken either in money or in plate. *Payment of Prizes.*

39. No Stallion or entire Colt, two years old or upwards, shall be allowed to compete for any of the Society's Prizes unless it has previously been licensed for stud purposes during the current year by the Board of Agriculture for Scotland, the Ministry of Agriculture and Fisheries, or the Irish Department of Agriculture. *Veterinary Examination of Stallions and Colts.*

40. Judges are particularly requested to satisfy themselves, as far as possible, regarding the soundness of all Horses before awarding the Prizes, and to avoid giving Prizes to animals showing symptoms of hereditary disease. The Judges may consult the Society's Veterinary Surgeon if they deem it expedient. Private accommodation is provided *Soundness of other Horses.* *Accommodation for*

examination. for the examination of horses by the Veterinary Surgeon. No protests on veterinary grounds will be received.

Ewes. 41. Every Ewe must have given birth to and reared a lamb in the year of the Show; and Ewes of the Blackface and Cheviot breeds must be in milk, and have their lambs at foot.

Milking. 42. Animals in milk of the Dairy breeds must be milked dry at 6 o'clock on the evening previous to the opening of the Show in the presence of, and to the satisfaction of, the Steward of Cattle or a representative of the Society duly authorised by him. Animals arriving after six o'clock will be milked dry at the time of arrival.

Clipping. 43. Sheep must have been clipt bare after the first day of the November preceding the Show, no part of the animal to be clipt prior to that date—this Rule not to apply to Cheviot Sheep.

No Blackface Sheep shall be eligible which has not been clipt bare on or after the 1st April of the year of the Show.

Colouring, &c., of Sheep and Pigs. 44. The Steward of Sheep, who can call in assistance if so desired by him, shall have full power to disqualify any pen of Blackface, Cheviot, Border Leicester, and Half-bred Sheep which he considers unnaturally coloured, or when the fleece, face, or legs have been dealt with by the use of foreign substances.

The use of artificial whitening or powder on Large White and Middle White Pigs is prohibited, and the Judge is empowered to disqualify any pig so whitened or powdered.

Flock Books. 45. All Oxford Down and Suffolk Sheep shown must be entered or eligible for entry in the Oxford Down and Suffolk Flock Books respectively.

Poultry. 46. In Poultry the Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Railway Passes. 47. Railway Certificates for Stock, for both outward and return journeys, are issued to Exhibitors before the Show along with their Tickets of Admission (see page 86).

Admission of Stock. 48. Poultry and Stock will be admitted on Monday, the day before the opening of the Show, and, with the exception of Horses, must be in the Yard before 12 o'clock that night. Horses must be in before 8 o'clock on the morning of Tuesday, except those entered in classes for which other times for arrival are elsewhere stated in this List. Judging begins at 9.30 A.M. on Tuesday. Exhibited on Tuesday, Wednesday, Thursday, and Friday. Any animals selected by the Stewards may be required to take part in the Stock Judging Competition on the Thursday. Stock may be admitted on the Saturday preceding the Show, but only by sending two days' prior notice to the Secretary's Office in the Showyard.

Parades. 49. Horses and Cattle must be paraded at the times stated in the Programme of the Show, and when required by the Stewards, and under their direction. Females of the Highland Cattle breed born in or after 1927 must be paraded; those born before 1927 will be paraded at the option of the exhibitor. In Parade, Horses must be ridden or led as provided in their respective classes. Prize and commended Cattle and Horses will receive two rosettes each, which must be attached to the head of the animal, one on each side. Attendants must be beside their animals *twenty minutes before the hour of Parade*, and be ready to proceed to the ring immediately on receiving the order of the Stewards. Infringement of this Rule, or failure of any attendant to obey the orders of the Society's officials, will render the Exhibitor liable to a fine of 20s. for each separate infringement or act of disobedience, and to the forfeiture of any or all of the Prizes awarded to him at this Show.

Responsibility of Exhibitors. 50. Exhibitors shall be answerable for all acts, whether committed by themselves, their servants, or others in charge of their Stock, and shall be responsible for the condition of their animals during the whole time they remain in the Showyard.

Moving from stalls. 51. No animal shall be taken out of its stall after 10 A.M. during the Show except by order of the Stewards, or with permission of the Secretary.

52. Cattle shall not be taken out of their stalls to be washed after the Judging has commenced. Cattle must not be washed beside the Judging Rings. Those infringing this Rule shall be liable to a fine of 10s. *Washing Cattle.*
53. Soap or other adhesive material must not be used in dressing cattle or horses. Infringement of this Rule will render the animal upon which the material is used liable to be disqualified. *Soaping prohibited.*
54. Loose-boxes will be provided for all horses; covered accommodation for other live stock. Stalls for nurse cows charged at ordinary rates. Boxes (floored) for attendants on Cattle, Horses, Sheep, Goats, and Pigs will be provided at a charge of 40s. for each box for members; 50s. for non-members. (See Rule 79.) *Loose-boxes and Stalls.*
55. Exhibitors requiring the boxes, stalls, or pens for their animals to be floored must give instructions, stating the Catalogue No., to the Society's Showyard Erector, Mr John Reid, Showyard, ten days before the Show opens. (For charges, see Rule 78.) *Floored Boxes and Stalls for Animals.*
56. Bulls must be secured by nose-rings, with chains or ropes attached, or with strong halters and double ropes. All Cattle, other than Highland Cattle, must be tied in their stalls. *Securing Cattle.*
57. During the time the Show is open to the public no rug shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of that department. *Concealing Animals.*
58. Five days' supply of straw, hay, grass, and tares will be provided free by the Society. Any additional fodder or other kinds of food required will be supplied at fixed prices in the Forage-yard. The Forage-yard will close at 1.30 p.m. on Friday, the last supply to be given to attendants then; and if any extra supply is required on account of stock remaining in the Yard after the close of the Show, notice must be given to the Forage Steward not later than 5 o'clock on Thursday. Any servant removing bedding from an adjoining stall will be fined in double the amount taken. Exhibitors may fetch their own cake or corn to the Yard, but not *grass, tares, hay, or straw*. Coops, food, and attendance for Poultry and Rabbits will be provided by the Society. *Fodder.*
59. Servants in charge of Stock must bring their own buckets or pails and a piece of rope or sheep-net to carry their forage. Mangers, and sheep and pig troughs, will be provided. *Feeding appliances.*
60. Sawdust must not be used as bedding for Stock. *Sawdust.*
61. As the command of water in the Yard is limited, it is particularly requested that waste be avoided. *Water.*
62. No lights allowed in the Yard at night, and Smoking is strictly prohibited within the Sheds. Those infringing this Rule shall be liable to a fine of 10s. The gates will be closed at midnight, and no person shall be allowed to enter or leave the Yard between that time and 5 a.m. without a special permit. *Lights and Smoking.*
63. Stock or Poultry cannot be removed from the Yard till 5 p.m. on Friday, the last day of the Show, except on certificate by the Veterinary Surgeon employed by the Directors, countersigned by the Steward of the department or the Secretary. *Closing of Gates.*
64. At the close of the Show on Tuesday, Wednesday, and Thursday, horses may be withdrawn for the night on a deposit of £5 for each animal, which shall be forfeited, along with any prize money it may have gained, if the animal is not brought back. They must return between 7 and 7.30 the following morning, and those not in before 8 shall forfeit 10s. Horse passes to be applied for at the Secretary's Office between 5 and 6 p.m. on Tuesday, and the deposit, unless forfeited in whole or in part, will be returned between 12.30 and 2.30 on Friday. *Removal of Stock.*
65. When the Stock is leaving the Yard, no animal is to be moved till ordered by those in charge of clearing the Yard. Those transgressing this Rule shall be liable to a fine of 10s., and to be detained till all the other Stock is removed. *With-drawal of horses over-night.*
66. Poultry may be penned before the opening and removed at the *Order in removal.*
- Penning and*

*removing
Poultry.*

close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative of the Exhibitor being present to pen or remove Poultry, the birds will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits.

*Closing of
Poultry
Shed to
Public.*

67. On the opening day of the Show the Poultry Shed will be closed to the public during the Judging. On the last day of the Show the Poultry Shed will be closed to the public at 4 P.M.; at 5 P.M. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, *not later than 11 A.M. on the last day of the Show*, given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Poultry Shed at 5 P.M. to remove the birds.

JUDGING STOCK AND POULTRY.

*Opening
Gates.*

68. On Tuesday, the first day of the Show, no person will be admitted, except Servants in charge of Stock, till 8 A.M., when the Gates are opened to the public.

Judging.

69. The Judges will commence their inspection at 9.30 A.M. The spaces reserved for the Judging will be enclosed, and no encroachment shall be permitted.

*Insufficient
merit.*

70. In no case shall a Premium be awarded unless the Judges deem the animals to have sufficient merit; and where only one or two lots are presented in a class, and the Judges consider them unworthy of the Premiums offered, it shall be in their power to award a lower prize.

*Commenda-
tions.*

71. In addition to the Premiums, the Judges may award **one** Very Highly Commended, **one** Highly Commended, and as many Commended tickets in each class as they consider justified by the number and merit of the entries.

*Ayrshire,
British
Friesian,
and Red
Poll Cows
and
Heifers.*

72. Ayrshire, British Friesian, and Red Poll Cows which have not calved before the Show, whether entered in a class for Cows in Milk or for Cows in Calf, shall be judged along with the Cows in Calf, and Ayrshire, British Friesian, and Red Poll Cows or Heifers which have calved before the Show—in whichever of the classes entered—shall be judged along with Cows in Milk.

*Attending
Members'
duties.*

73. Attending Members will accompany the Judge of each section. It will be the duty of Attending Members to bring the animals out to the Judges and to see that no obstruction is offered to them, and that the space reserved for them is not encroached upon; to ticket the prize animals; to send the Nos. of the prize animals to the Award Lectern near the Secretary's Office; to assist the Judges in completing their return of awards; and should any difficulty arise, to communicate with the Stewards or Secretary.

74. It shall not be competent for any Exhibitor, nor for his Factor or Land-Steward, to act as a Judge or attending Member in any class in which he is competing.

DAIRY PRODUCE.

75. Dairy Produce will be received in the Showyard on Monday, the day before the opening of the Show, and till 8 A.M. on Tuesday, the first day of the Show. Judged at 9.30 A.M. on Tuesday. Exhibited Tuesday, Wednesday, Thursday, and Friday.

*Placing
and re-
moving
Dairy
Produce.*

76. Dairy Produce must have been made on the Exhibitor's farm in the year of the Show. No Exhibitor shall show more than **one** lot in each class. Exhibits of Dairy Produce may be placed before the opening and removed at the close of the Show by Exhibitors themselves or their

representatives. In the event of neither the Exhibitor nor a person with written authority from the Exhibitor being present to place or remove exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 P.M. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective Exhibitors.

STALL RENT (INCLUDING ENTRY FEE).

77. The Stall Rents (which include Entry Fees) as stated opposite the individual Classes in this List, shall be paid by Exhibitors when making their Entries. The Secretary is instructed to return entries sent without the necessary fees. *Stall Rent.*

FLOORED BOXES AND STALLS.

78. Exhibitors desiring the boxes, stalls, or pens for their animals to be floored can have this done by giving instructions, stating the Catalogue No., ten days before the opening of the Show, to the Society's Showyard Erector (Mr John Reid, Showyard, The Links, Aberdeen), to whom the following charges for flooring have to be paid: Horses, 30s. each; Ponies, Cattle, Sheep, and Pigs, 20s. each. *Floored Stalls for Animals.*

ACCOMMODATION FOR ATTENDANTS.

79. Boxes for accommodation of attendants on Stock will, if desired, be provided beside the Stock at a charge of 40s. per box for members and 50s. for non-members. Attendants' boxes will be floored and lined with wood, with door. Applications for attendants' boxes must accompany entries of Stock, and (in the case of Cattle, Horses, and Pigs) Exhibitors must state the animal next to which the attendant's box is to be placed. Attendants' boxes cannot be guaranteed after the closing date. *Accommodation for Attendants.*

IMPLEMENTS AND OTHER ARTICLES.

80. Implements will be received in the Yard from Tuesday, 17th July, till 5 o'clock on the afternoon of Monday, 23rd July. Exhibited Tuesday, Wednesday, Thursday, and Friday. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor, and prices must be stated. *Admission of Goods.*

81. No Money Prizes or Medals, except when specially offered, will be given by the Society for Implements of any kind. *Premiums.*

82. Agricultural Implements, and Implements and collections of articles not Agricultural, will be received for Exhibition, but the Secretary is entitled to refuse Entries from dealers in articles not deemed worthy of Exhibition. *Refusing Entries.*

83. In order to encourage exhibits of Agricultural Implements from operative Blacksmiths and Carpenters in the district of the Show, open space will be provided for these in some less prominent part of the Yard at a charge of 15s. for space 10 feet wide and 20 feet deep. *Local Operatives.*

84. Every article to be exhibited must be entered on the Society's Entry Form. Any article not so entered that is taken to the Show is liable to be ordered out of, or removed from, the Showyard, or confiscated to the Society. Exhibitors infringing this rule are moreover liable to a fine of £1. *Articles not entered.*

Selling by auction and noisy behaviour forbidden.

85. "Cheap-Jacks" are not admitted to the Showyard. The selling of goods by auction, shouting, and other behaviour calculated to annoy visitors or Exhibitors, are strictly forbidden. Exhibitors infringing this Regulation are liable to a fine of £1, and to have themselves and their goods ordered out of, or removed from, the Showyard, or to have their goods confiscated to the Society.

Placing Exhibits. Removing Exhibits.

86. The articles of each Exhibitor must all be placed in one stand, except Implements in motion, and must not on any account extend beyond the allotted space. No article shall be moved out of its stand, or the stand dismantled, till the termination of the Show, at 5 P.M. on Friday. Those infringing this Rule shall be liable to a fine of 10s.

Restoring Turf.

87. When the ground requires to be broken, the turf must be carefully lifted and laid aside, and the surface must be restored to the satisfaction of the Society, and at the expense of the Exhibitor. Failing this being done, the Society shall be at liberty to restore the ground and charge the cost to the Exhibitor.

Arranging Exhibits.

88. Exhibitors must arrange their own articles *within* the space allotted to them before 9 o'clock on Tuesday, the first day of the Show, and to the satisfaction of the Stewards in charge of the Implement Yard. Exhibitors are prohibited from sub-letting space allotted to them, and from displaying the name of any other firm on their Stand. All signs, except signs on gables, must face the front only. Nails must not be driven into the canvas.

Signs.

Handbills.

89. Exhibitors are not allowed to distribute handbills anywhere in the Yard except at their own Stand; and they must not for this or any other purpose encroach upon the adjacent alleys or open spaces.

Sweeping Stands, &c.

90. Exhibitors are required to have their Stands and the portions of the alleys immediately adjoining them swept up before eight o'clock on each morning of the Show.

Fuel.

91. All Machines requiring steam or fire must be entered as such in the Certificate, and will be placed in the Motion Yard. *Coke only shall be used in all cases where fire is required.* Coal shall not be used at any time in the Showyard. Those infringing this Rule shall incur a penalty of £5.

Steam Engines.

92. No Steam Engine shall be driven in the Yard at a greater speed than 4 miles an hour. Traction Engines shall not be used in conveying Exhibits or other goods from one place to another in the Showyard.

Traction Engines.

93. Locomotive and Traction Engines and other Machines must not be moved from their places without permission of the Secretary or Stewards, and must not leave their stands till 6 P.M. on Friday.

Consigning Implements.

94. There must be attached to each Implement, when forwarded to the Show, a label bearing the Exhibitor's name, and that of the Implement, as well as the number of the Exhibitor's stand.

Photographing in Showyard.

95. The carriage of all Implements must be prepaid.

96. Photographing in the Showyard is not permitted, except by photographers having a Stand in the Showyard or holding a "Photographer's Ticket." The "Photographer's Ticket" may be had from the Secretary, price 20s. It admits the holder to the Show when open to the public, and entitles him to photograph in the Showyard, subject to arrangements made by the Stewards. It does not entitle the holder to sell photographs in the Showyard. No photographer shall be allowed in the ring during Parades, except with the sanction of the Steward of Parades.

Offices.

97. Covered Booths for Offices (9 feet by 9 feet), purely for business, not for exhibition of goods, can be had for £5 to Members and £7 to Non-Members.

Exhibitors' and Attendants' Tickets.

98. Each Exhibitor in the Implement Department who is not a Member of the Society will receive one free Ticket of Admission to the Showyard for himself or a member of his firm, and will receive, in addition, for the use of attendants employed by him at his Stand, two Tickets of Admission for each complete ten feet of shedding in the

Motion Yard, and one Ticket for each complete ten feet of shedding in the other sections. No additional Free Tickets can be issued in any circumstances whatever. Additional Attendants' Tickets, not more than three for each ten feet of frontage, and in no case exceeding a maximum of twenty for one Exhibitor, may be obtained by application in writing by the Exhibitor at 5s. each. *No tickets will be issued without an Order.*

99. The Tickets of Admission for Exhibitors and Attendants referred to in the foregoing Regulation will (about fourteen days prior to the Show) be issued to the Exhibitors in blank, with the number of the Exhibitor's Stand. The name of the person for whom each ticket is intended must be written on it before it is used. Each person holding a Free Ticket of Admission must sign his or her name on the back thereof, and must also, when required, sign his or her name in the book at the Entrance Gate. Exhibitors' attendants are strictly cautioned not to lend or transfer their Tickets, which can be used only by the persons whose names they bear, and who must be *bona fide* acting for, or employed by, the Exhibitor. No Ticket is transferable. An Exhibitor is liable to a fine of £1 for each case of transfer or other improper use of a Ticket issued to himself or employee.

Tickets to be filled up and signed.

100. The following are the arrangements for the admission of Supplies (Refreshments or other goods) for Stand-holders during the Show: Messenger on foot (with or without hand-barrow) with supplies, admitted by Special Ticket; price for one admission, 2s., for the four days, 6s. Motor or horse vehicle and driver, with supplies, admitted by Special Ticket; price for one admission, 2s., for the four days, 10s. These Special Tickets may be had from the Secretary. Vehicles, with supplies, admitted throughout the day on the first day of the Show; on the other three days they will not be admitted between the hours of 10 A.M. and 5 P.M. except by written permit from the Secretary.

Tickets not Transferable. Improper use of Tickets. Admission of Supplies for Stand-holders.

101. The riding of Cycles in the Showyard is prohibited.

Cycles.

102. The Society will not be responsible for any accident that may occur from the machinery belonging to any Exhibitor; and it is a condition of entry that each Exhibitor shall hold the Society harmless, and indemnify it against any legal proceedings arising from any accident caused by his machinery.

Accidents.

103. The giving of Alcoholic Drinks to visitors at Stands in the Show is strictly prohibited.

Alcoholic Drinks.

104. Exhibitors desiring the use of gas in the Showyard should apply to the Engineer, Gas Works, Aberdeen, not later than Saturday, 16th June.

Gas.

105. * Ground to be taken in spaces of 10 feet frontage by 20 feet deep, and in Motion Yard in spaces of 10 feet frontage by 50 feet deep. Exhibitors must take their space in one or other of the following Sections. Space is not let partly covered and partly open. Exhibits not in motion may be excluded from the Motion Yard. The space in the Motion Yard being limited in extent, and intended mainly for exhibits in motion, not more than one-fifth of the space allotted to any one Exhibitor—and in no case more than 600 square feet—may be occupied in the Motion Yard by exhibits not in motion.

Space for Stands.

Exhibits not in Motion.

106. The maximum extent of space which any one Exhibitor may apply for shall be 60 feet of frontage in the Motion Yard, and 120 feet of frontage in the other Sections.

Maximum Space.

107. The Society reserves the right to allot to applicants for Stands either the whole or part of the space they ask for.

Allocation of space.

108. Exhibitors requiring work executed in connection with the fitting up of stands allotted to them must employ the Society's Showyard Erector—Mr John Reid, 55 Blenheim Place, Aberdeen. The execution of orders received later than one week before the opening of the Show cannot be guaranteed.

Fitting up of Stands.

* Special provision may be made for Exhibitors of both machinery in motion and implements and machinery not in motion on application being made to the Secretary.

109. Rates for space, payable by Exhibitors when making their Entries:—

	Members.	Non-Members.
1. Open ground without Shedding, 20 ft. deep, per 10 ft.	£1 10 0	£2 5 0
2. Special open ground, without Shedding, 20 ft. deep, per 10 ft.	2 10 0	3 5 0
3. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	1 10 0	2 5 0
4. Special Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	2 10 0	3 5 0
5. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, close boarded at back, per 10 ft.	3 0 0	4 0 0
6. Special Shedding, 20 ft. deep, 7 ft. to eave, close boarded at back, per 10 ft.	4 10 0	5 10 0
7. *Motion Yard, without Shedding, 50 ft. deep, per 10 ft.	3 0 0	4 15 0
8. *Motion Yard, with Shedding (10 ft. open behind, 20 ft. covered, and 20 ft. open in front), 11 ft. to eave, per 10 ft.	4 10 0	6 0 0
9. Special Section for Motor Vehicles, 20 ft. deep, 11 ft. to eave, per 10 ft.	4 10 0	5 10 0
10. Covered Booths for offices, 9 ft. by 9 ft., each	5 0 0	7 0 0
11. Press offices, 9 ft. by 9 ft., each	£4.	

* See Rules 105 and 106.

Tents and marquees not allowed in the Showyard. All internal fittings to be executed by the Exhibitor at his own expense. The Society's Showyard Erector must be employed. See Rule 108.

NEW IMPLEMENTS.

1. An Exhibitor who desires to enter a "New Implement" for competition for the Society's Silver Medal must enter it separately as a "New Implement" at the commencement of the specification of his proposed exhibits; and he must define clearly, on a special form obtainable from the Secretary, the exact nature of the novelty which qualifies such implement to be entered for a Medal. Unless the "New Implement" be properly described in the specification, and particulars of its novelty are given at the time of making the entry, it will not be accepted.

2. For each entry of a "New Implement," sent with an application for space, made in accordance with Regulation 109, a non-returnable Entry Fee of £1 will be charged. Late entries of "New Implements" only will, however, be considered up to 11th June, provided that no increase of space beyond that originally allotted to the Exhibitor will be occasioned by such New Implements being shown at his stand.

3. In cases of sufficient merit, the Judges will recommend the award of the Society's Silver Medal to New Implements for agricultural or estate purposes, or to new improvements in such implements. Before making an award the Judges shall report to the Directors whether they consider a practical trial necessary.

4. The Society does not bind itself to try in the field every "New Implement" entered for a Silver Medal. Any Exhibitor who expresses a wish to do so can, with the sanction of the Steward of Implements, at his own expense take his New Implement out of the Showyard during the Show week and put it to work, and if within a reasonable distance, the Judges will, if they deem it necessary, inspect it at work and decide if it is worthy of a Silver Medal.

5. No Silver Medals will be awarded to, nor can any entry as New Implements be accepted of, machines of any class for which competitive trials have been announced by the Society as about to take place.

6. The Judges of New Implements will commence their inspection at 2.30 P.M. on Monday, 23rd July, and will take in rotation the stands of the exhibitors who have entered New Implements for the Society's Silver Medals. Each Exhibitor, or his representative, will be expected to be at the stand to explain the working of the Implement to the Judges. If the exhibit be not ready and in working order by the time the Judges make their inspection, it is liable to be struck off the list.

7. All publications by exhibitors of the award of the Society's Silver Medals must state the year of the award, and must specify the exact nature of the "New Implement," of the improvement, or of the attachment to an Implement, for which the Silver Medal has been awarded.

8. On the recommendation of the Judges, with the approval of the Directors, any New Implement of merit, which cannot be sufficiently tried, or which is capable of further development, may be entered and exhibited as a "New Implement" at the succeeding Show of the Society.

9. The Judges' decision, when duly accepted and recorded, will in all cases be final.

RESERVED SEATS (NUMBERED) IN GRAND STAND.

For Charges and Tickets, apply to Secretary up to opening day of Show. Thereafter tickets are sold only at the Booking-Office in Showyard behind Grand Stand.

ADMISSION OF THE PUBLIC.

The public will be admitted daily at 8 A.M. Judging begins on Tuesday at 9.30 A.M. The charges for admission to the Yard will be—**Tuesday**, from 8 A.M. till 5 P.M., 7s. 6d. **Wednesday**, from 8 A.M. till 5 P.M., 5s. ; from 5 P.M. to 8 P.M., 2s. 6d. **Thursday**, from 8 A.M. till 5 P.M., 2s. 6d. ; from 5 P.M. till 8 P.M., 1s. **Friday**, from 8 A.M. till 5 P.M., 1s.

On **Thursday** and **Friday** children under twelve years of age admitted at 6d.

No Pass-out Checks given, and no re-admission without payment.

Season Tickets—12s. 6d. each—on application to Secretary. On the days of the Show, Season Tickets are sold only at the Entrance Gates.

ADMISSION OF MEMBERS AND EXHIBITORS.

On exhibiting their "*Member's Badge*," which is strictly not transferable, Members of the Society are admitted free to the Showyard. Badges will be sent to all Members residing in Great Britain, Northern Ireland, and Irish Free State, whose addresses are known, and on no account will duplicates be issued. All Members not producing their badges must pay at the gates, and the admission money will not on any account be returned. Badges must be signed by Members before being presented at the gate, and Members should continue to wear the badge during the whole time that they are in the Showyard.

Tickets of admission to the Showyard are sent to Exhibitors of Stock, Poultry, Dairy Produce, &c. (not Members), whose Entry Fees amount to not less than 12s. 6d.

For Exhibitors of Implements and their assistants tickets are issued as provided in the Regulations for Implements.

VARIOUS.

Exhibitors may display their own Placards *inside and in front of* their stands ; with this exception, no Bills of any kind other than those of the Society are permitted on any of the Show erections. No newspapers or any other articles to be carried about the Yard for sale or display.

No Carriages or Equestrians admitted without special leave from the Directors, and then only for Invalids. Bath-chairs may be brought in.

Premium Lists, Regulations, and Certificates of Entry may be obtained by applying at the Secretary's Office, No. 3 George IV. Bridge, Edinburgh.

All Communications should be addressed to The Secretary of the Highland and Agricultural Society of Scotland, No. 3 George IV. Bridge, Edinburgh. From 18th to 26th July, to the Secretary's Office, Showyard, The Links, Aberdeen.

Address for Telegrams—"SOCIETY," EDINBURGH.

Telephone No.—EDINBURGH, 23655.

RAILWAY ARRANGEMENTS.

The Railway Companies will be furnished with a list of the Exhibitors of Stock and Implements, after the 3rd July. All applications for horse-boxes and trucks, and for information as to train arrangements, must be made by the Exhibitors themselves to the Stationmaster where their stock is to be trucked.

The arrangements made by the Railway Companies for the conveyance of Live Stock and Goods to and from the Show are indicated below, but exhibitors are recommended to apply to the respective companies for full particulars:—

1. Live Stock and Goods to the Show to be charged ordinary rates.
2. Live Stock and Goods from the Show, if sold, to be charged ordinary rates.
3. Live Stock from the Show, if unsold, and returned not later than the second day after the closing day of the Show (excluding Sunday), to be carried at half rates back to the Station whence the animals were sent, at owner's risk, on surrender of a Certificate from the Exhibitor, provided in accordance with the Railway Companies' requirements, and signed by the Secretary, to the effect that they are really unsold; failing surrender of such certificate, ordinary rates will be charged. The reduction to half rates is to be allowed only when the Stock are returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the Stock at half rates by a different route.

4. Live Poultry from the Show, if unsold, to be carried by Passenger Train at half rates back to the Station from which sent, at O.R., on surrender of an agreed certificate signed by the Secretary of the Show to the effect that the Poultry are unsold and remain the property of the exhibitor. No certificate will be required for such traffic which is intended by the owner to be returned from the Show to the original sending Station by the same route as originally forwarded and the charges prepaid for both the outward and return journeys.

Poultry are only charged at the half rate when returned not later than the second day after the closing of the Show (Sunday being treated as a *dies non*).

5. Horse-boxes, or other Passenger Train vehicle, will not be provided for the carriage of Live Stock sent by Goods Train and invoiced at Goods Train rates. *For rates for Horse-boxes by Passenger and Special Trains, apply to the Railway Companies.*

6. Provender conveyed to and from Agricultural Shows with Live Stock will be charged at the applicable rates, subject to a free weight allowance, viz.—

Cattle	per animal, 56 lb.
Horses	56 "
Sheep, goats, lambs, pigs, and calves	28 "

7. The carriage of all Live Stock, Implements, and other articles going to the Show for exhibition must be PREPAID; and the carriage on all traffic returned from the Show by Passenger Train Service must be PREPAID.

The carriage charges on Live Stock conveyed in special vehicles by Passenger Train and intended to be returned to the original sending Station may also be prepaid for the return journey at the original sending Station if the owner so desires.

The Railway Charge on all exhibits which are conveyed by Passenger Train in the Guard's Van and intended to be returned from the Show direct to the original sending Station by the same route must be PREPAID, for both the outward and return journeys, at the original sending Station. The agreed form of address label for Poultry, Rabbits, Dairy Produce, Bee Appliances, Wool, and Rural Industries exhibits, which will be supplied through the Secretary of the Society, must be used in such cases.

8. Attendants in charge of Live Stock are conveyed free in the cases shown below, when certified by the owners to be *bona fide* in charge of such Live Stock:—

In Horse-Boxes.—Horses and Cattle: One man for each consignment, except where the consignment requires more than one vehicle, when one man to each vehicle may be sent free; but where two or three Horses or Cattle forming one consignment are sent in the same Horse-box and a man is required to travel with each animal, a man for each animal may be conveyed free, provided each animal is charged for separately.

In Horse-Boxes.—Small animals: One man to each vehicle.

In specially constructed Cattle Trucks.—Cattle or other animals: One man to each vehicle.

9. Agricultural Machines, Implements, and other Exhibits from the Show, if unsold, to be conveyed at half rates back to the Station whence they were sent,

at Owner's risk, on production of a Certificate from the Exhibitor, provided and signed by the Show Secretary, to the effect that they are unsold; failing production of such Certificate, ordinary rates must be charged. The reduction to half rates is to be allowed only when the articles are returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the articles at half rates by a different route.

10. Unsold articles, previously carried by railway, transferred from one Show to another, or exhibited at several Shows consecutively, and returned to the Station from whence originally sent, will be conveyed at half rates at Owner's risk, on production of a Certificate from the Exhibitor (provided and signed by the Show Secretary) to the effect that they are unsold; failing production of such Certificate, ordinary rates will be charged. This applies only to Goods Trains.

11. The ordinary rates charged for carriage do not in any case include delivery to, or collection from, the Showground.

12. Agricultural Societies' Show Plant must be charged at Class 10 rates, station to station.

13. Tents, Canvas, and other articles, not for exhibition, to be charged the ordinary rates both going and returning.

14. Carriages and other Road Vehicles are only conveyed by Passenger Train when this can be conveniently done.

DELIVERY AND COLLECTION CHARGES.

Cartage Charges to be paid by the Exhibitor for the Delivery or Collection of traffic between the Railway Stations at Aberdeen and the Showground of the Highland and Agricultural Society's Show at The Links, Aberdeen, on 24th, 25th, 26th, and 27th July 1928.

General traffic	5s. 6d. per ton.
Minimum charge per consignment	3s.
Implements and Machinery (Agricultural), not exceeding 1 ton each	5s. 6d. per ton.
Minimum charge per delivery	3s.
Implements and Machinery (Agricultural) on their own wheels (specially hauled), not exceeding 1 ton	8s. each.
When hauled on their own wheels behind lorry, loaded or partly loaded with goods, actual weight at	5s. 6d. per ton.
Single articles, exceeding 1 ton but not exceeding 3 tons	8s. per ton.
Single articles, exceeding 3 tons but not exceeding 5 tons	9s. 6d. per ton.
Single articles, exceeding 5 tons, by special arrangement only, but no less charge than	11s. 9d. per ton.
Rustic Houses, by special arrangement only, but no less charge than	14s. per load.
Carriages, on their own wheels	6s. each.
Cattle, in floats	6s. per head.
Minimum charge for each float	8s. 6d.
Sheep, Goats, and Pigs, in floats	1s. 6d. per head.
Minimum charge for each float	8s. 6d.
Pigs, in crates	3s. 3d. per crate.
Minimum charge per load	6s. 6d.
Ordinary Parcels by passenger train	6d. each.
Miscellaneous passenger train traffic, in- cluding packages of plants and flowers carried at O.R. rates S. to S.	9d. per cwt.
Minimum charge per consignment	1s. 6d.

*Poultry in crates or hampers } 9d. per crate or hamper.
 *Rabbits in crates, hampers, &c. . . . }

* Poultry and Rabbit exhibits only will be conveyed at the Society's expense from the Railway Station to the Showyard and back, but no exhibit subject to railway charges will be received by the Society. All other delivery charges must be paid by the Exhibitor.

REGULATIONS FOR GOAT CLASSES.

The animals will be milked dry at 6 o'clock on the evening previous to the opening of the Show, in the presence of, and to the satisfaction of, the Steward or a representative of the Society duly authorised by him.

All exhibits must be registered either in the Herd-Book, Foundation Book, Show Register, or Kid Register of the British Goat Society, in the name of the exhibitor (the registered number being quoted on the entry form), or if previously entered or owned by someone other than the exhibitor, a transfer of ownership must be registered with the British Goat Society.

MILKING COMPETITION—CLASS 146.

The animals will be milked at 5 P.M. on Tuesday, 24th July, at an appointed place in the order arranged by the Steward, and the milk of the next twenty-four hours will be taken for the trials. The hours of milking shall be 8 A.M. and 5 P.M. on Wednesday, 25th July.

All Goats must have kidded within twelve months of the first day of the Show.

The prizes will be awarded according to the following scale of points:—

For each pound of milk 1 point.

For each complete 6 days the Goat has been in milk (omitting the first forty days), with a maximum of 5.4 points $\frac{1}{10}$ of a point.

For each $\frac{1}{4}$ lb. of fat in the milk 5 points.

In cases where the milk contains less than 3 per cent of fat 1 point will be deducted.

The period of lactation to be calculated from the date of kidding to the first day of the Show. No prize will be awarded to a Goat giving less than 5 $\frac{1}{2}$ lbs. of milk per day.

Fractions of lbs. of milk and percentages of fat to be worked out in decimals and added to the total points.

A Certificate giving the last date of kidding, signed by the owner of the Goat exhibited, or his Agent, must in every case be brought to the Steward of Goats as soon as possible after the animal has arrived in the Showyard.

The milk yielded by Goats in the Showyard shall be the property of the Society.

REGULATIONS FOR RABBIT CLASSES.

Rabbits must be brought to the Showyard between 5 P.M. and 9 P.M. on Tuesday, the first day of the Show. No lot will be admitted without an Admission Order. Pens, food, and attendance will be found by the Society.

Rabbits may be penned on Tuesday evening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative of the Exhibitor being present to pen or remove Rabbits, they will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits.

On the Wednesday, the second day of the Show, the Rabbit Shed will be closed to the public during the Judging. On the last day of the Show the Rabbit Shed will be closed to the public at 4 P.M.; at 5 P.M. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, *not later than 11 A.M. on the last day of the Show*, given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Rabbit Shed at 5 P.M. to remove the Rabbits.

THE PRESIDENT'S CHAMPION MEDALS

A Champion Medal is given by the Marquess of Aberdeen and Temair, K.T., President of the Society, for the best *Animal* in each of the following sections:—

1. Shorthorn.	10. Clydesdale Stallion or Colt.	16. Western Island Pony.	24. Suffolk.
2. Aberdeen-Angus.	11. Clydesdale Gelding.	17. Shetland Pony.	25. Shropshire.
3. Galloway.	12. Clydesdale Mare or Filly.	18. Harness Horse.	26. Dorset Horn.
4. Belted Galloway.	13. Shire.	19. Blackface Sheep.	27. Goat.
5. Highland.	14. Hunter.	20. Cheviot.	28. Large White Pig.
6. Ayrshire.	15. Highland Pony.	21. Border Leicester.	29. Middle White.
7. British-Friesian.		22. Half-bred.	30. Large Black.
8. Red Poll.		23. Oxford-Down.	31. Large White Ulster.
9. Fat Cattle.			

NOTE.—*Animals entered as Extra Stock may compete for these Medals. Former Winners of the President's Medals are eligible. The Society shall have the right to photograph the Winners for publication in the 'Transactions.'* At this Show no animal can be awarded more than one of these Medals.

ENTRY FEES		CLASS	* CATTLE SHORTHORN		PREMIUMS			
Members	Non-Members				First	Second	Third	Fourth
			Judge: John Taylor					
			<i>President's Medal for best Shorthorn</i>					
			1 Paisley Perpetual Gold Challenge Cup, value £300, for best Shorthorn animal, "Extra Stock" being eligible to compete.		£	£	£	£
			2 The Duthie Perpetual Challenge Cup, value £150, for best Animal in the Shorthorn Classes, "Extra Stock" being eligible to compete.					
25/-	45/-	1	Bull born before 1st December 1925		15	10	5	3
25/-	45/-	2	Bull born on or after 1st December 1925 and before 1st April 1926		15	10	5	3
25/-	45/-	3	Bull born on or after 1st April 1926, and not later than 30th November 1926		12	8	4	2
25/-	45/-	4	Bull born on or after 1st December 1926, and not later than 31st March 1927		12	8	4	2
25/-	45/-	5	Bull born on or after 1st April 1927		10	6	4	2
			3 The Emilio R. Casares, jun., "Junior Champion Cup," value £50, for best Shorthorn Bull in Class 5, calved on or after 1st April of the year preceding the Show, that has passed the tuberculin test.					
			4 Best Shorthorn Bull in the Show, entered or eligible for entry in Coates's Herd-Book—£20.					
			4 Silver Medal to the Breeder of the winner of above Prize.					
			Breeder of best Bull of any age in the five Classes—The Silver Medal.					

* See Rules 32 and 33.

1 This Cup, along with an endowment of £600, was provided from money collected in Paisley by the late Provost Muir M'Kean, and is in commemoration of the Society's first Show at Paisley in 1913. This year the Cup is offered for the best Shorthorn. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

2 This Cup was gifted by the late Mr William Duthie, Collynie. The Cup may not be won on more than one occasion with the same animal. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica as a memento of his winning the Cup.

3 Given by Mr Emilio R. Casares, jun. This Cup will become the property of the Exhibitor who shall win it three times, not necessarily in succession.

4 Given by the Shorthorn Society.

ENTRY FEES		CLASS	CATTLE	PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
			SHORTHORN—continued				
25/-	45/-	6	Cow born before 1st December 1924, in Milk . . .	12	8	4	2
25/-	45/-	7	Cow born on or after 1st December 1924 . . .	10	5	3	2
25/-	45/-	8	Cow or Heifer born on or after 1st Dec. 1925 . . .	10	5	3	2
25/-	45/-	9	Heifer born on or after 1st Dec. 1926 and not later than 31st March 1927 . . .	10	5	3	2
25/-	45/-	10	Heifer born on or after 1st April 1927 . . .	10	5	3	2
			¹ Silver Cup, value 15 guineas, for best group of Shorthorns, consisting of a Bull, a Cow, and a Heifer. "Extra Stock" eligible to compete.				
			² Best Shorthorn Female in the Show, entered or eligible for entry in Coates's Herd-Book—£20.				
			² Silver Medal to the Breeder of the winner of above Prize.				
			PRIZE MONEY BY SOCIETY . . .	£246			
			CONTRIBUTED PRIZES . . .	40			
			ABERDEEN-ANGUS				
			Judge: D. M. Allan				
			<i>President's Medal for best Aberdeen-Angus Animal</i>				
			³ Fife and Kinross Perpetual Gold Challenge Cup, value £200, for best Aberdeen-Angus animal, "Extra Stock" being eligible to compete.				
25/-	45/-	11	Bull born before 1st Dec. 1925 . . .	15	10	5	3
25/-	45/-	12	Bull born on or after 1st Dec. 1925 . . .	15	10	5	3
25/-	45/-	13	Bull born on or after 1st Dec. 1926 . . .	12	8	4	2
			⁴ Ballindalloch Challenge Cup, value £50, for the best Bull of any age in the three Classes.				
			Breeder of best Bull of any age in the above Classes—The Silver Medal.				
			Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
25/-	45/-	14	Cow in Milk born before 1st Dec. 1924 . . .	12	8	4	2
25/-	45/-	15	Cow in Milk born on or after 1st Dec. 1924 . . .	12	8	4	2
25/-	45/-	16	Cow or Heifer born on or after 1st Dec. 1925 . . .	10	5	3	2

¹ Presented by Mr Robert W. Smith, M.P., Crowmallie, Pitcaple, Aberdeenshire.

² Given by the Shorthorn Society.

³ This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912. This year the Cup is offered for the best Aberdeen-Angus animal. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

⁴ "The Ballindalloch Challenge Cups," value £50 each, are offered for the best Bull of any age and best Cow of any age (Heifers excluded) in the Aberdeen-Angus Classes, the former presented by the late Sir George Macpherson Grant, Bart., and the latter by the late Sir John Macpherson Grant, Bart. Each Cup will become the property of the Exhibitor who shall win it five times, not necessarily in succession. The breeder of the successful animals each year will receive the Society's Silver Medal, with suitable inscription.

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
				£	£	£	£
CATTLE							
ABERDEEN-ANGUS—continued							
25/-	45/-	17	Heifer born on or after 1st Dec. 1926 and before 1st March 1927	10	5	3	2
25/-	45/-	18	Heifer born on or after 1st March 1927	10	5	3	2
			¹ Ballindalloch Challenge Cup, value £50, for the best Cow of any age in Classes 14, 15, and 16.				
			Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
			² Silver Cup, value £50, for the best female animal of the Aberdeen-Angus breed, to become the property of an Exhibitor who shall win it four times, not necessarily in succession. "Extra Stock" eligible to compete.				
			³ Champion Gold Medal for best Animal in the Breeding Classes, breeding animals shown as "Extra Stock" eligible to compete.				
PRIZE MONEY BY SOCIETY .				£204			
GALLOWAY							
Judge: Hugh Fraser							
<i>President's Medal for best Galloway</i>							
			⁴ Dr Gillespie Memorial Challenge Trophy, value £50, for best Galloway Animal in the Breeding Classes, breeding animals shown as "Extra Stock" being eligible to compete—see conditions below.				
25/-	45/-	19	Bull born before 1st Dec. 1925	15	10	5	3
25/-	45/-	20	Bull born on or after 1st Dec. 1925	15	10	5	3
25/-	45/-	21	Bull born on or after 1st Dec. 1926	12	8	4	2
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
25/-	45/-	22	Cow of any age in Milk	12	8	4	2
25/-	45/-	23	Cow or Heifer born on or after 1st Dec. 1925	10	5	3	2
25/-	45/-	24	Heifer born on or after 1st Dec. 1926	10	5	3	2
PRIZE MONEY BY SOCIETY .				£158			

¹ See note 4 on previous page.² Presented by Mr Falconer L. Wallace of Candacraig and Balcairn, Strathdon. A Silver Medal will be given by the Society to the winner as a memento of his winning the Cup.³ Given by the Aberdeen-Angus Cattle Society.⁴ This Trophy is offered by the Galloway Cattle Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Galloway animal registered in the Galloway Cattle Society's Herd-Book, entered in any of the breeding classes, at the Show or Shows at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Galloway Cattle Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive the Galloway Cattle Society's Silver Medal as a memento of his winning the Trophy.

ENTRY FEES			CLASS	PREMIUMS			
Members	Non-Members	CATTLE					
				First	Second	Third	Fourth
			£	£	£	£	
BELTED GALLOWAY							
Judge: J. Gardiner							
<i>President's Medal for best Belted Galloway Animal</i>							
¹ Knockbrenx Challenge Cup, value £50, for the best Belted Galloway Animal, "Extra Stock" being eligible to compete.							
25/-	45/-	25	Bull born before 1st December 1926	10	5	3	2
25/-	45/-	26	Bull born on or after 1st December 1926	10	5	3	2
25/-	45/-	27	Cow or Heifer born before 1st December 1925, in Milk or in Calf; if in calf, to calve on or before 1st December of the year of the Show	10	5	3	2
25/-	45/-	28	Heifer born on or after 1st December 1925	10	5	3	2
25/-	45/-	29	Heifer born on or after 1st December 1926	10	5	3	2
PRIZE MONEY BY SOCIETY				£80			
² CONTRIBUTED PRIZES				20			
HIGHLAND							
Judge: John M. Macdonald							
<i>President's Medal for best Highland Animal</i>							
25/-	45/-	30	Bull born before 1926	15	10	5	3
25/-	45/-	31	Bull born in 1926	15	10	5	3
25/-	45/-	32	Bull born in 1927	12	8	4	2
³ Perpetual Victory Challenge Cup, approximate value 50 Guineas, for the best Animal in the Male Classes, "Extra Stock" being eligible to compete.							
Breeder of best Bull of any age in the three Classes—The Silver Medal.							
25/-	45/-	33	Cow of any age in Milk	12	8	4	2
25/-	45/-	34	Cow or Heifer born in 1925	10	5	3	2
25/-	45/-	35	Heifer born in 1926	10	5	3	2
25/-	45/-	36	Heifer born in 1927	10	5	3	2
³ Perpetual Victory Challenge Cup, approximate value 35 Guineas, for the best Animal in the Female Classes, "Extra Stock" being eligible to compete.							
PRIZE MONEY BY SOCIETY				£178			

¹ This Cup was presented by Mrs Brown, Kirkbrenx, Glasgow, for the best Belted Galloway animal registered in the Dun and Belted Galloway Cattle Breeders' Association Herd-Book, entered in any of the breeding classes, at the Show at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive a Silver Medal as a memento of his winning the Trophy.

² Contributed by the Dun and Belted Galloway Cattle Breeders' Association.

³ Given by the Highland Cattle Society of Scotland.

ENTRY FEES		CLASS	CATTLE AYRSHIRE	PREMIUMS		
Members	Non-Members			First	Second	Third
			Judge: Alexander Cochrane			
			1. To be eligible for competition in the Ayrshire Section Cows must have an authenticated Milk Yield, and younger Females (including Cows which have not completed their first lactation) and Bulls an authenticated Milking Pedigree, of a definite minimum amount.			
			2. The minimum amount referred to shall be as follows, calculated on the basis of a period between calvings of 52 weeks, and 3·8 per cent of butter fat:—			
			(a) Cows which have completed two or more lactations—700 gallons.			
			(b) Cows which have completed only one lactation—600 gallons.			
			(c) Younger Females and Bulls—an authenticated Milking Pedigree for dam and dam of sire on a similar basis.			
			3. In the case of Cows with two or more lactations the record lodged may be that for any year the Exhibitor may select.			
			4. In the case of a Cow which has no milking pedigree, and which has not completed her first lactation at date of entry, but is likely to calve again before date of Show, such Cow may be provisionally entered on her own milk yield produced within forty weeks after first calving, but when the Cow has calved again a further certificate in terms of the Rules must be obtained and produced before the Cow is allowed to enter the judging ring. The latter certificate is the standard of qualification, and failure to produce such will render the Cow liable to disqualification, and no entry money will be returned.			
			5. The evidence of Milk Yield and Milking Pedigree shall be in the form of a Certificate signed by the Secretary of the Scottish Milk Records Association. The Certificate, besides giving the actual yields, shall give these calculated on a uniform basis of a period of 52 weeks between calvings, and 3·8 per cent butter fat. This latter figure shall be communicated to the Judges before adjudicating.			
			In the case of Exhibitors founding on the Milk Yield of any animal, or animals, made in England, said Exhibitors must forward their Record Books, together with a Certificate from a competent analyst, stating that a butter fat test had been made at least once every 28 days during the period of lactation, and with details of said butter fat tests attached, to the Secretary of the Scottish Milk Records Association, who has undertaken to check the records and to certify same.			
			6. The authenticated Milk Yields and authenticated Milking Pedigrees shall appear in the Catalogue.			
			<i>N.B.—Certificates above referred to must be obtained from Mr John Howie, 58 Alloway Street, Ayr, and lodged with Entries.</i>			
			<i>President's Medal for best Ayrshire</i>			
			¹ Cowhill Champion Cup, approximate value £30, for best Animal of the Ayrshire breed, entered with a number in the Herd-Book. The Cup to be won three times, not necessarily in succession, by the same person with different animals, before becoming the property of the winner.			
45/-	65/-	37	² Cow in Milk,* born before 1925	12	8	4
45/-	65/-	38	² Cow in Milk,* born on or after 1st Jan. 1925	10	7	3
45/-	65/-	39	² Cow of any age in Calf,* and due to calve before 1st Dec. of the year of the Show	10	7	3

¹ Presented by Major Henry Keswick, Cowhill Tower, Dumfries, to the Ayrshire Cattle Herd-Book Society, to be competed for annually at the Shows of the Highland and Agricultural Society of Scotland.

² Cows in these Classes must have produced a calf within fifteen months prior to the Show.

* See Rule 72.

ENTRY FEES		CLASS	CATTLE	PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£
25/-	45/-	40	Heifer born in or after 1925, in Calf and due to calve before 1st Dec. of the year of the Show .	10	7	3
25/-	45/-	41	Heifer born in 1926	10	5	3
25/-	45/-	42	Heifer born in 1927	8	5	3
			¹ Special Prize of £10 for the best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June 1928.			
25/-	45/-	43	Bull born before 1926	12	8	4
25/-	45/-	44	Bull born in 1926	10	7	3
25/-	45/-	45	Bull born in 1927	8	5	3
			Breeder of best Bull of any age in Classes 43, 44, and 45—The Silver Medal.			
			¹ Special Prize of £10 for the best Male Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June 1928.			
			PRIZE MONEY BY SOCIETY . . . £178			
			CONTRIBUTED PRIZES . . . 20			
BRITISH FRIESIAN						
Judge: Alexander Wilson						
<i>President's Medal for best British Friesian Animal</i>						
			² The MacRobert Champion Silver Bell, value 50 Guineas, for the best Animal in the British Friesian Classes, registered in or eligible for entry in the British Friesian Cattle Herd-Book, "Extra Stock" being eligible to compete.			

¹ Given by the Ayrshire Cattle Herd-Book Society.

² Presented by Lady Rachel Workman MacRobert, Douneside, Tarland. This Bell will become the property of the Exhibitor who shall win it three times, not necessarily in succession. The winner of the Bell on each occasion will receive a miniature replica in silver as a memento of his winning the Bell. The Breeder of the winning animal will also receive a replica, provided he or she is not also the Exhibitor.

ENTRY FEES		CLASS	CATTLE	PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£
BRITISH FRIESIAN—continued						
45/-	65/-	46	¹ Cow in Milk,* born in or before 1924	12	8	4
45/-	65/-	47	¹ Cow in Calf,* and not in Milk, born in or before 1924	10	5	3
45/-	65/-	48	¹ Cow in Milk, born in 1925 or 1926	10	5	3
25/-	45/-	49	Heifer born in 1926	10	5	3
25/-	45/-	50	Heifer born in 1927, before 1st July	10	5	3
25/-	45/-	51	Heifer born in 1927, on or after 1st July	10	5	3
			Champion Prize of £5 given by the British Friesian Cattle Society for the best Female exhibited.			
25/-	45/-	52	Bull born in or before 1925	12	8	4
25/-	45/-	53	Bull born in 1926	10	5	3
25/-	45/-	54	Bull born in 1927	10	5	3
			Breeder of Best Bull of any age in Classes 52, 53, and 54—The Silver Medal.			
			Champion Prize of £5 given by the British Friesian Cattle Society for the best Male exhibited.			
			PRIZE MONEY BY SOCIETY	£120		
			² CONTRIBUTED PRIZES	64		
RED POLL						
Judge: F. D. Brown						
<i>President's Medal for best Red Poll Animal</i>						
			³ Kinmount Challenge Cup , value about £50, for the best Female Animal in the Red Poll Classes registered in the Red Poll Cattle Society's Herd-Book, "Extra Stock" being eligible to compete.			
25/-	45/-	55	¹ Cow in Milk or in Calf, born before 1926	10	5	3
25/-	45/-	56	Heifer born in 1926	10	5	3
25/-	45/-	57	Heifer born in 1927	10	5	3
25/-	45/-	58	Bull born in or before 1926	10	5	3
25/-	45/-	59	Bull born in 1927	10	5	3
			PRIZE MONEY BY SOCIETY	£65		
			⁴ CONTRIBUTED PRIZES	25		

* See Rule 72.

¹ Cows in these Classes must have produced a calf within fifteen months prior to the Show.² Contributed by the British Friesian Cattle Society.³ This Cup was presented to the Society by Lieut.-Colonel Charles Brook of Kinmount, Annan. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so.⁴ Contributed by Red Poll Cattle Society.

ENTRY FEES		CLASS	PREMIUMS		
Members	Non- Members		First £	Second £	Third £
CATTLE					
FAT CATTLE					
Judge : John Alsop					
<i>President's Medal for best Fat Animal</i>					
25/-	45/-	60	Ox, any pure breed or cross, born on or after 1st Dec. 1925 and before 1st Dec. 1926		
			7	3	—
25/-	45/-	61	Ox, any pure breed or cross, born on or after 1st Dec. 1926		
			7	3	—
25/-	45/-	62	Heifer, any pure breed or cross, and any age		
			7	3	—
PRIZE MONEY BY SOCIETY			£30		
[Exhibitors of Fat Cattle are requested to state the breed of the sire and dam when making their entries.]					
PRIZE MONEY BY SOCIETY			£1259 0		
CONTRIBUTED			169 0		
CUPS, MEDALS, &c.			1197 10		
Total Prizes for Cattle			£2625 10		
[See Note as to EXTRA STOCK, p. 111.]					

ENTRY FEES		CLASS	PREMIUMS																															
Members	Non- Members		First £	Second £	Third £	Fourth £																												
* HORSES CLYDESDALE STALLION AND COLT Judge : George M'Dowall President's Medal for best Clydesdale Stallion or Colt ¹ Cawdor Challenge Cup, value 50 Guineas, for best Clydesdale Stallion or Colt. <table><tr><td>55/-</td><td>75/-</td><td>63</td><td>Stallion born before 1925</td><td>20</td><td>15</td><td>10 4</td></tr><tr><td>55/-</td><td>75/-</td><td>64</td><td>Entire Colt born in 1925</td><td>20</td><td>15</td><td>10 4</td></tr><tr><td>55/-</td><td>75/-</td><td>65</td><td>Entire Colt born in 1926</td><td>20</td><td>15</td><td>10 4</td></tr><tr><td>40/-</td><td>60/-</td><td>66</td><td>Entire Colt born in 1927</td><td>15</td><td>10</td><td>6 4</td></tr></table> Breeder of best Male Animal of any age in the above Classes—The Silver Medal. PRIZE MONEY BY SOCIETY . £182							55/-	75/-	63	Stallion born before 1925	20	15	10 4	55/-	75/-	64	Entire Colt born in 1925	20	15	10 4	55/-	75/-	65	Entire Colt born in 1926	20	15	10 4	40/-	60/-	66	Entire Colt born in 1927	15	10	6 4
55/-	75/-	63	Stallion born before 1925	20	15	10 4																												
55/-	75/-	64	Entire Colt born in 1925	20	15	10 4																												
55/-	75/-	65	Entire Colt born in 1926	20	15	10 4																												
40/-	60/-	66	Entire Colt born in 1927	15	10	6 4																												

* For prizes given by the Society, no animal is allowed to compete in more than one Class, except that horses entered in other Classes may also compete in the Jumping and Harness Classes.

¹ This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Clydesdale Stallion or Colt registered in the Clydesdale Stud-Book, entered in any of the Draught Horse Classes, at the Show at which it may be competed for. No Stallion rising five years old or upwards will be allowed to compete for this Cup unless proof be furnished to satisfy a Committee, appointed for this purpose by the Council of the Clydesdale Horse Society, that he has during the preceding season left at least 35 per cent of the mares served by him in foal. The Cup must be won four times by an Exhibitor with different animals (but not necessarily in consecutive years) before it becomes his absolute property. The animal winning this Cup must be certified free from hereditary disease. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner on each occasion will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 32.

ENTRY FEES			CLASS	PREMIUMS			
Members	Non- Members	First		Second	Third	Fourth	
				£	£	£	£
HORSES							
CLYDESDALE—continued							
GELDING							
Got by a Registered Clydesdale Stallion							
Judge: John Cocker							
President's Medal for best Clydesdale Gelding							
40/-	60/-	67	¹ Silver Cup, value £10, for best Clydesdale Gelding				
40/-	60/-	68	Gelding born before 1925	10	5	3	—
40/-	60/-	69	Gelding born in 1925	8	5	3	—
			Gelding born in 1926	8	5	3	—
PRIZE MONEY BY SOCIETY				£50			
MARE AND FILLY							
Judge: Thomas Clark							
President's Medal for best Clydesdale Mare or Filly							
			² Renfrewshire Perpetual Gold Challenge Cup, value £250, for best Clydesdale Mare or Filly, "Extra Stock" being eligible to compete.				
			³ Cawdor Challenge Cup, value 50 Guineas, for best Clydesdale Mare or Filly.				
55/-	75/-	70	Mare of any age, with Foal at foot	20	12	7	4
40/-	60/-	71	Yeld Mare born before 1925	15	9	6	4
40/-	60/-	72	Yeld Mare or Filly born in 1925	15	9	6	4
40/-	60/-	73	Filly born in 1926	15	9	6	4
40/-	60/-	74	Filly born in 1927	15	9	6	4
			⁴ William Taylor Memorial Prize of £10 and Certificate to the breeder of the best Clydesdale Filly entered in Classes 73 and 74.				
PRIZE MONEY BY SOCIETY				£179			
CONTRIBUTED PRIZES				10			

¹ Given by the Marquess of Aberdeen and Temair, K.T.

² This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir M'Kean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrew in 1913. This year the Cup is offered for the best Clydesdale Mare or Filly. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

³ This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book, entered in any of the Draught Horse Classes, at the Show at which it may be competed for. The Cup must be won four times by an Exhibitor with different animals (but not necessarily in consecutive years) before it becomes his absolute property. The animal winning this Cup must be certified free from hereditary disease. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner on each occasion will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

⁴ Given by William Taylor Memorial Committee.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 35.

ENTRY FEES			CLASS	HORSES	PREMIUMS			
Members	Non-Members	First			Second	Third	Fourth	
					£	£	£	£
HORSES								
SHIRE								
Judge : J. M. Belcher								
(To be judged at 2.30 P.M. on Tuesday, 24th July)								
President's Medal for best Shire Animal in Classes 75 and 77								
55/- 40/-	75/- 60/-	75 76	Stallion or Colt born before 1927	20	15	10	4	
			Gelding, by a registered Shire Stallion, born before 1926	10	5	3	—	
40/- 40/-	60/- 60/-	77 78	Yeld Mare or Filly born before 1927	15	9	6	4	
			Filly, Colt, or Gelding born in 1927, bred in Scotland, and by a Registered Shire Stallion	8	5	3	—	
[Note.—Stallions and Mares must be registered, or tendered for registration, in the Shire Horse Stud-Book before date of Show.]								
PRIZE MONEY BY SOCIETY £70 4								
¹ CONTRIBUTED PRIZES . 46 16								
Total Prize Money for Draught Horses, £538								
HUNTER								
Judge: Lt.-Colonel Alexander J. King, C.B., C.M.G., D.S.O.								
(To be judged at 2.30 P.M. on Tuesday, 24th July)								
President's Medal for best Hunter								
55/- 40/- 40/- 40/-	75/- 60/- 60/- 60/-	79 80 81 82	Hunter Brood Mare, with Foal at foot	15	7	3	—	
			Yeld Mare, Filly, or Gelding born in 1925—in hand	10	5	3	—	
			Yeld Mare, Filly, or Gelding born in 1926—in hand	10	5	3	—	
			Filly, Colt, or Gelding born in 1927—in hand	10	5	3	—	
² Best Hunter Filly, not exceeding three years old, registered with a number in the Hunter Stud- Book, or the entry tendered within a month of the award—Champion Gold Medal.								
PRIZE MONEY BY SOCIETY . £79								

¹ Given by the Shire Horse Society.² Given by the Hunters' Improvement and National Light Horse Breeding Society.

ENTRY FEES		CLASS	HORSES	PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£
HORSES						
¹ HIGHLAND PONY						
Judge: John M. Macdonald						
<i>President's Medal for best Highland Pony</i>						
<i>(To be judged at 1.30 P.M. on Tuesday, 24th July)</i>						
40/-	60/-	83	Stallion born before 1926, not exceeding 14.2 hands	8	4	2
40/-	60/-	84	Mare born before 1926, not exceeding 14.2 hands, yield or with Foal at foot	8	4	2
40/-	60/-	85	Entire Colt born on or after 1st January 1926	6	4	2
40/-	60/-	86	Filly born on or after 1st January 1926	6	4	2
² Special Prize of £10 for the best Highland Stallion, Mare, Colt, or Filly, entered or accepted for entry in the Highland Section of the National Pony Stud-Book, "Extra Stock" being eligible to compete. Competition to be strictly confined to animals passed sound and free from hereditary disease.						
PRIZE MONEY BY SOCIETY				£12		
CONTRIBUTED PRIZES				50		
WESTERN ISLAND PONY						
Judge: Major William Logan, O.B.E.						
<i>(To be judged at 1.30 P.M. on Tuesday, 24th July)</i>						
<i>President's Medal for best Western Island Pony</i>						
40/-	60/-	87	Stallion born before 1926, not exceeding 14 hands	8	4	2
40/-	60/-	88	Mare born before 1926, not exceeding 14 hands, yield or with Foal at foot	8	4	2
40/-	60/-	89	Entire Colt born on or after 1st January 1926	6	4	2
40/-	60/-	90	Filly born on or after 1st January 1926	6	4	2
² Special Prize of £10 for the best Western Island Stallion, Mare, Colt, or Filly, entered or accepted for entry in the Highland Section of the National Pony Stud-Book, "Extra Stock" being eligible to compete. Competition to be strictly confined to animals passed sound and free from hereditary disease.						
PRIZE MONEY BY SOCIETY				£52		
CONTRIBUTED PRIZES				10		

¹ The Board of Agriculture for Scotland gives £40 towards prizes for Highland Ponies.

² Given by the National Pony Society and the Highland Pony Society.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
				£	£	£	£
HORSES							
SHETLAND PONY							
Judge: Matthew White, M.R.C.V.S.							
(To be judged at 1.30 P.M. on Tuesday, 24th July)							
(All to be shown in hand)							
<i>President's Medal for best Shetland Pony</i>							
35/-	55/-	91	Stallion, not exceeding 10½ hands, born before 1925	8	5	3	2
35/-	55/-	92	Entire Colt, not exceeding 10½ hands, born in 1925 or 1926	8	5	3	2
35/-	55/-	93	Mare, not exceeding 10½ hands, with Foal at foot	8	5	3	2
35/-	55/-	94	Yeld Mare, not exceeding 10½ hands	8	5	3	2
35/-	55/-	95	Filly, not exceeding 10½ hands, born in 1925 or 1926	8	5	3	2
35/-	55/-	96	Gelding, not exceeding 10½ hands, born before 1926	8	5	3	2
			¹ Silver Cup for best Shetland Pony of any age, drawn from ordinary Classes—and shown in saddle. (To be judged by Hunter Judge.)				
			² Special Prizes of £5, £3, and £2 for best Gelding in saddle competing for above Cup	10	—	—	—
			³ Best Group of Shetland Ponies, drawn from the ordinary Classes, consisting of one male and two females; one female to be a mare with foal at foot, but the foal not to be reckoned as one of the Group	10	—	—	—
			⁴ Silver Medal for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or eligible for entry in the Shetland Pony Stud-Book.				
PRIZE MONEY BY SOCIETY . . .				£108			
CONTRIBUTED PRIZES . . .				20			

¹ Given by a past President of the Shetland Pony Stud-Book Society. If less than three competitors the Cup will not be awarded.

² Given by Colonel Robert W. Walker, Portlethen, Aberdeen.

³ Given by "Four Lovers of the Breed," per Mr W. Mungall of Transy.

⁴ Given by the Shetland Pony Stud-Book Society.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

ENTRY FEES			CLASS	PREMIUMS			
Members	Non- Members	First		Second	Third	Fourth	
£	£	£		£	£	£	
HORSES							
RIDING PONY							
(To be judged by the Hunter Judge at 4 P.M. on Wednesday, 25th July)							
5/-	5/-	97	Mare or Gelding, any age, over 12 hands and not exceeding 14 hands, in saddle, to be ridden by boy or girl 10 years and under 14 years of age on first day of Show	5	3	2	—
5/-	5/-	98	Mare or Gelding, any age, not exceeding 12 hands, in saddle, to be ridden by boy or girl under 10 years of age on first day of Show	5	3	2	—
PRIZE MONEY BY SOCIETY				£20			
[Ponies in Classes 97 and 98 must be in the Showyard not later than 3 P.M. on Wednesday, and may leave immediately after the Afternoon Parade on Thursday. Boxes are not provided for these ponies.]							
1 HORSE IN HARNESS							
Judge: Captain R. MacLean							
(To be judged at 11 A.M. on Wednesday, 25th July)							
2 President's Medal for best animal in the Classes for Horses in Harness							
3 The "Glasgow" Champion Challenge Cup, value £50, for best Horse in Single Harness; competition limited to First, Second, and Third Prize-Winners in Harness Classes, and animals entered as "Extra Stock."							
40/-	60/-	99	Yeld Mare, Filly, or Gelding, any age, in Harness, exceeding 15 hands, to be driven in the ring	15	10	5	—

¹ Animals entered in other Classes may be entered in the Harness Classes at an additional fee of 5s. if they are eligible.

² An animal that has won a President's Medal in another section in this Show shall not be eligible to compete for the Medal in this section.

³ The "Glasgow" Challenge Cup is offered for the best Horse in Single Harness, and will become the property of the Exhibitor who shall win it three times, not necessarily in succession. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive the Society's Silver Medal as a memento of his winning the Cup.

Shed accommodation for machines for Driving Competitions—Members, 10s.; Non-Members, 20s.

ENTRY FEES			PREMIUMS		
Members	Non-Members	CLASS	First £	Second £	Third £
HORSES					
HORSE IN HARNESS—continued					
40/-	60/-	100	Yeld Mare, Filly, or Gelding, any age, in Harness, over 14 hands and not exceeding 15 hands, to be driven in the ring		
			15	10	5
40/-	60/-	101	Yeld Mare, Filly, or Gelding, any age, not exceeding 14 hands, to be driven in the ring		
			10	5	3
PRIZE MONEY BY SOCIETY			£78		
[Horses in Harness Classes must be in the Showyard not later than Tuesday evening, judged on Wednesday, and may leave the Showyard on Thursday immediately after the Afternoon Parade.]					
DRAUGHT GELDING IN HARNESS					
Judge : John Cocker					
(To be judged at 11 A.M. on Friday, 27th July)					
5/-	10/-	102	Draught Gelding, any age, in Harness, shown in Cart or Lorry (and driven by single driver), it being a condition that the Horse must have been regularly worked for a period of twelve weeks prior to the first day of the Show. To be exhibited on FRIDAY, 27th July. Only the Prize-Winners to take part, as required, in the Parade on Friday. Prizes—£10, £5, £3, £2, £1.		
TOTAL PRIZE MONEY			£21		
PRIZE MONEY BY SOCIETY			£851 4		
CONTRIBUTED			136 16		
CUPS, MEDALS, &c.			435 0		
Total Prizes for Horses			£1423 0		
[See Note as to EXTRA STOCK, p. 111.]					

JUMPING COMPETITIONS

SPECIAL REGULATIONS

(See also the Regulations on pages 74 to 81)

1. Jumping Competitions will take place on the afternoons of Wednesday, Thursday, and Friday, 25th, 26th, and 27th July, and on the evenings of Wednesday and Thursday, 25th and 26th July.
2. Entries for each afternoon Competition will close at the Secretary's Office in the Showyard at 5 P.M. on the preceding day. Entries for Evening Jumping may be received until 5 P.M. on the evening of the Competition.
3. Entry Fees.—Wednesday and Thursday afternoons, £1; Friday, 10s. Evening Jumping, 10s.
4. Accommodation for jumping horses will be provided as follows: Covered shed in which to stand during the day free of charge; or, on application to the Secretary not less than ten days before the opening of the Show, stalls or loose-boxes will be provided at a charge (in addition to the Entry Fee) of £1 for a stall and £2 for a loose-box, which must be paid along with the Entry Fee at the time of application.
5. Horses entered for jumping only need not enter the Showyard till 12 noon on the day of Competition, and may leave the Showyard at the close of the jumping.
6. The Jumps may consist of Single Hurdle, Gate, Double Hurdle, Wall, and Water Jump, power being reserved by the Society to alter these, as well as the Handicaps, as may be thought desirable.

ENTRY FEE	CLASS		First	Second	Third	Fourth	Fifth
		WEDNESDAY.					
		<i>AFTERNOON.</i>	£	£	£	£	£
20/-	1	Horse or Pony, any height	20	15	10	5	3
		<i>EVENING.</i>					
10/-	2	Horse or Pony, any height, which has not previously won a Prize of more than £10 at this or any other Competition	10	8	5	3	2
		THURSDAY.					
		<i>AFTERNOON.</i>					
20/-	3	Horse or Pony, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1	20	15	10	5	3
		<i>EVENING.</i>					
10/-	4	Horse or Pony, any height	10	8	5	3	2
		FRIDAY.					
10/-	5	Horse or Pony, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 3—4 inches extra for the winner of the two first prizes in Classes 1 and 3	15	10	5	3	2
		Champion Prize for most points in Prizes with one horse in Classes 1, 3, and 5—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; and Fifth Prize, one point—the money to be evenly divided in the event of a tie	10	—	—	—	—
		Total Prize Money for Jumping, £207					

Special Entry Forms for above Competitions to be had on application.

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members			First £	Second £	Third £	Fourth £
S H E E P							
*BLACKFACE							
Judge: J. J. Macmillan							
President's Medal for best Blackface Sheep							
15/-	25/-	103	Tup above one shear	12	8	4	2
15/-	25/-	104	Shearling Tup	12	8	4	2
15/-	25/-	105	Shearling Tup, which shall have been entirely out-wintered, and not housed or house-fed at any time, and not clipped before 21st May 1928	12	8	4	2
15/-	25/-	106	Tup Lamb	5	3	2	—
15/-	25/-	107	Ewe above one shear, with her Lamb at foot	10	5	2	—
15/-	25/-	108	Shearling Ewe or Gimmer	10	5	2	—
PRIZE MONEY BY SOCIETY				£122			
CHEVIOT							
Judge: Andrew Douglas							
President's Medal for best Cheviot Sheep							
¹ Perpetual Challenge Cup, value £25, gifted by Mr J. Borthwick, for best Sheep in the Cheviot Classes.							
15/-	25/-	109	Tup above one shear	12	8	4	2
15/-	25/-	110	Shearling Tup	12	8	4	2
15/-	25/-	111	Tup Lamb	5	3	2	—
15/-	25/-	112	Ewe above one shear, with her Lamb at foot	10	5	2	—
15/-	25/-	113	Shearling Ewe or Gimmer	10	5	2	—
PRIZE MONEY BY SOCIETY				£96			

* Formal Declarations must be made at time of entry that the conditions as regards clipping, &c., have been strictly adhered to.

¹ Given by Cheviot Sheep Society.

ENTRY FEES			CLASS	PREMIUMS			
Members	Non-Members	First		Second	Third	Fourth	
		£		£	£	£	
SHEEP							
BORDER LEICESTER							
Judge : William Robson, jun.							
<i>President's Medal for best Border Leicester Sheep</i>							
¹ Tweeddale Gold Medal for best Border Leicester Tup.							
15/-	25/-	114	Tup above one shear	12	8	4	2
15/-	25/-	115	Shearling Tup	12	8	4	2
15/-	25/-	116	Tup Lamb	5	3	2	—
² Gold Medal for best Male Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.							
15/-	25/-	117	Ewe above one shear	10	5	2	—
15/-	25/-	118	Shearling Ewe or Gimmer	10	5	2	—
15/-	25/-	119	Ewe Lamb	5	3	2	—
² Gold Medal for best Female Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.							
PRIZE MONEY BY SOCIETY				£106			
HALF-BRED							
Judge : Walter J. Grieve							
<i>President's Medal for best pen of Half-Bred Sheep</i>							
15/-	25/-	120	Tup above one shear	10	7	3	—
15/-	25/-	121	Shearling Tup	10	7	3	—
15/-	25/-	122	Ewe above one shear	10	5	2	—
15/-	25/-	123	Shearling Ewe or Gimmer	10	5	2	—
15/-	25/-	124	Three Ewe Lambs	5	3	2	—
PRIZE MONEY BY SOCIETY				£84			

¹ Annual Free Income from Fund of £500.² Given by the Society of Border Leicester Sheep-Breeders.

ENTRY FEES		CLASS	PREMIUMS		
Members	Non-Members		First	Second	Third
			£	£	£
SHEEP					
OXFORD-DOWN					
Judge: John Kinnaird					
<i>(All sheep to be entered or eligible for entry in the Flock-Book)</i>					
<i>President's Medal for best pen of Oxford-Down Sheep</i>					
¹ Scottish Oxford-Down Sheep-Breeders' Challenge Bowl , value £50, for the best Oxford-Down Animal bred in Scotland, to be won three times by the same owner, but with different sheep, before becoming his property.					
15/-	25/-	125	Shearling Tup	8	5 3
15/-	25/-	126	Shearling Ewe or Gimmer	8	5 3
15/-	25/-	127	Tup Lamb	8	5 3
15/-	25/-	128	Three Ewe Lambs	8	5 2
PRIZE MONEY BY SOCIETY			£42		
¹ CONTRIBUTED PRIZES			21		
SUFFOLK					
Judge: J. W. Eagle					
<i>(All sheep to be entered or eligible for entry in the Flock-Book)</i>					
<i>President's Medal for best pen of Suffolk Sheep</i>					
15/-	25/-	129	Tup, one shear and over	8	5 3
15/-	25/-	130	Shearling Ewe or Gimmer	8	5 3
15/-	25/-	131	Tup Lamb	8	5 3
15/-	25/-	132	Three Ewe Lambs	8	5 2
PRIZE MONEY BY SOCIETY			£48		
² CONTRIBUTED PRIZES			15		
SHROPSHIRE					
Judge: J. M. Belcher					
<i>President's Medal for best Shropshire Sheep</i>					
15/-	25/-	133	Tup, any age	6	4 2
15/-	25/-	134	Ewe or Gimmer	5	3 2
PRIZE MONEY BY SOCIETY			£22		

¹ Given by Oxford-Down Sheep-Breeders' Association.² Given by the Suffolk Sheep Society.

ENTRY FEES		CLASS	PREMIUMS			
Members	Non-Members		First	Second	Third	
			£	£	£	
SHEEP						
DORSET HORN						
Judge : G. A. Kingswell						
President's Medal for best Dorset Horn Sheep						
15/-	25/-	135	Tup, any age	6	4	2
15/-	25/-	136	Ewe or Gimmer	5	3	2
			PRIZE MONEY BY SOCIETY	£17		
			¹ CONTRIBUTED	5		
FAT SHEEP						
Judge : William B. Williamson						
15/-	25/-	137	Three Fat Lambs, any breed or cross, dropped in the year of the Show	5	3	2
15/-	25/-	138	Three Fat Lambs, out of Blackface Ewes, dropped on or after 1st March of the year of the Show	5	3	2
[Exhibitors of Fat Sheep are requested to state the breed of sire and dam when making their entries : entries in Class 138 must also be accompanied by a certificate certifying date of birth.]						
			PRIZE MONEY BY SOCIETY	£20		
			PRIZE MONEY BY SOCIETY	£557		
			CONTRIBUTED	41		
			CUPS, MEDALS, &c.	120		
			Total Prizes for Sheep	£718		
[See Note as to EXTRA STOCK, p. 111.]						

¹ Given by the Dorset Horn Sheep-Breeders' Association.

ENTRY FEES			CLASS	PREMIUMS		
Members	Non- Members	First		Second	Third	
		£		£	£	
* GOATS						
Judge: Mrs G. M. Soames						
President's Medal for best animal in the Goat Classes						
(All animals must be registered)						
1 Challenge Cup, value 20 Guineas, for the best Female Goat in the Show.						
2 Challenge Cup, value £10, for best Female Anglo-Nubian Goat over two years old, in Milk, entered in the Anglo-Nubian section of the Herd-Book, "Extra Stock" being eligible to compete.						
3 Silver Jug, value £5, to the winner of the First Prize in Class 146.						
5/-	10/-	139	Male Goat, any variety, over two years	3	2	1
5/-	10/-	140	Male Goat, any variety, over one but not exceeding two years	3	2	1
5/-	10/-	141	Male Kid, any variety, not exceeding one year	3	2	1
5/-	10/-	142	Female Goat, Anglo-Nubian, in Milk	3	2	1
5/-	10/-	143	Female Goat, any other variety, in Milk	3	2	1
5/-	10/-	144	Goatling, any variety, over one but not exceeding two years	3	2	1
5/-	10/-	145	Female Kid, any variety, not exceeding one year	3	2	1
5/-	10/-	146	4 Milking Competition, open to Classes 142 and 143	3	2	1
NOTE.—No animal is allowed to compete in more than one Class, except that Goats entered in Classes 142 and 143 may also be entered in Class 146.						
PRIZE MONEY BY SOCIETY £36 BOARD OF AGRICULTURE FOR SCOTLAND 12 CUPS 36 Total Prizes for Goats £84						
[See Note as to EXTRA STOCK, p. 111.]						

The Competition for Goats is recognised by the British Goat Society, 10 Lloyds Avenue, London, E.C.3, which will give Challenge Certificates (qualifying for a Championship) for the best Male Goat over one year, for the best Female Goat over two years that has borne a kid, and for the best dual purpose Goat over two years that has borne a kid; a Breed Challenge Certificate for the best Anglo-Nubian Female Goat over two years that has borne a kid; a Bronze Medal for the best female exhibit in Classes 142, 143, 144, and 145; and a Bronze Medal for the best male exhibit in Classes 139, 140, and 141.

¹ Given by Lord Dewar, London—to be competed for annually.

² Given by Mrs S. Macdonald, Garrochty—to be competed for annually.

³ Given by the Marchioness of Aberdeen and Temair.

⁴ For Regulations for Milking Competition see page 88. The milk yielded by Goats in this Class shall be the property of the Society.

* For Regulations see page 88.

ENTRY FEES			CLASS	PREMIUMS		
Members	Non-Members	First £		Second £	Third £	
* PIGS						
LARGE WHITE						
Judge : George Will						
(All Large White Pigs to be entered or eligible for entry in the Herd-Book of the National Pig-Breeders' Association)						
President's Medal for best Large White Pig						
1 Gold Medal, value £5, for the best Large White Boar in the Show.						
15/-	25/-	147	Boar born before 1927	8	4 2	
15/-	25/-	148	Boar born in 1927	8	4 2	
15/-	25/-	149	Boar born in 1928	6	3 1	
1 Gold Medal, value £5, for the best Large White Sow in the Show.						
15/-	25/-	150	Sow born before 1927	8	4 2	
15/-	25/-	151	Sow born in 1927	8	4 2	
15/-	25/-	152	Sow born in 1928	6	3 1	
PRIZE MONEY BY SOCIETY				£76		
MIDDLE WHITE						
Judge : John E. B. Cowper						
(All Middle White Pigs to be entered or eligible for entry in the Herd-Book of the National Pig-Breeders' Association)						
President's Medal for best Middle White Pig						
1 Gold Medal, value £5, for the best Middle White Pig in the Show.						
15/-	25/-	153	Boar born before 1928	8	4 2	
15/-	25/-	154	Boar born in 1928	6	3 1	
15/-	25/-	155	Sow born before 1927	8	4 2	
15/-	25/-	156	Sow born in 1927	8	4 2	
15/-	25/-	157	Sow born in 1928	6	3 1	
PRIZE MONEY BY SOCIETY				£56		
1 CONTRIBUTED PRIZES				6		

* See Rule 35.

¹ Given by the National Pig-Breeders' Association.

ENTRY FEES			CLASS		PREMIUMS		
Members	Non-Members				First	Second	Third
					£	£	£
PIGS							
LARGE BLACK							
Judge: T. F. Hooley							
<i>President's Medal for best Large Black Pig</i>							
¹ Silver Challenge Cup , value 12 Guineas, for best Large Black Boar or Sow owned by an Exhibitor resident in Scotland, and to become the property of an Exhibitor winning it twice in succession or three times at intervals.							
¹ Silver Medal for the best Large Black Boar.							
15/-	25/-	158	Boar born before 1927	.	8	4	2
15/-	25/-	159	Boar born in 1927	.	8	4	2
15/-	25/-	160	Boar born in 1928	.	6	3	1
¹ Silver Medal for the best Large Black Sow.							
15/-	25/-	161	Sow born before 1927	.	8	4	2
15/-	25/-	162	Sow born in 1927	.	8	4	2
15/-	25/-	163	Sow born in 1928	.	6	3	1
PRIZE MONEY BY SOCIETY					£51		
¹ CONTRIBUTED PRIZES					25		
LARGE WHITE ULSTER							
Judge: Richard Rattray							
<i>President's Medal for best Large White Ulster Pig</i>							
15/-	25/-	164	Boar born before 1928	.	8	4	2
15/-	25/-	165	Boar born in 1928	.	6	3	1
15/-	25/-	166	Sow born before 1928	.	8	4	2
15/-	25/-	167	Sow born in 1928	.	6	3	1
PRIZE MONEY BY SOCIETY					£28		
² CONTRIBUTED PRIZES					20		
PRIZE MONEY BY SOCIETY					£211	0	
CONTRIBUTED					51	0	
CUPS, MEDALS, &c.					27	12	
Total Prizes for Pigs					£289	12	

¹ Given by Large Black Pig Society.² Given by the Large White Ulster Pig Society.**EXTRA STOCK**

(FORMER WINNERS AND STOCK NOT ELIGIBLE FOR ORDINARY CLASSES).

Animals not included in the Classes for Competition may be exhibited as Extra Stock, and may receive Awards as follows: the Silver Medal, the Medium Silver Medal, and the Bronze Medal.

Animals entered as Extra Stock are eligible to compete for the President's Medals, whether former winners of these Medals or not. They are also eligible to compete for Special Prizes where the conditions of these Prizes permit.

While every endeavour will be made to see that former winners are correctly entered in the Catalogue as "Extra Stock," the Society accepts no responsibility for this, it being the duty of Exhibitors to state clearly on the Entry Form the Show at which the animal became disqualified for the Ordinary Classes. If an animal appears in the Catalogue as entered in an Ordinary Class which should appear as "Extra Stock," it cannot thereafter be transferred to the "Extra Stock" Section.

Entry Fees—same as corresponding Classes.

* POULTRY

Judges: John Meikle, Classes 1 to 22, 61 to 72, and 89 to 96; David Reid, Classes 23 to 60; John Fulton, Classes 73 to 88; Rev. J. Wilson, Classes 97 to 119.

¹ **Champion Challenge Bowl**, value £50, for the best exhibit in the Poultry Classes.

First Premium—ONE SOVEREIGN; *Second Premium*—TEN SHILLINGS. In each Class in which there are four or more entries a Third Prize of Five Shillings may be awarded, provided there is sufficient merit in the pens. In addition to the Premiums, the Judges may award *one* Very Highly Commended, *one* Highly Commended, and as many Commended tickets in each class as they consider justified by the number and merit of the entries.

Champion Medals are offered as follows:—

- | | |
|--------------------------------|------------------------------|
| 1. Best Cock, any Variety. | 4. Best Pullet, any Variety. |
| 2. Best Hen, any Variety. | 5. Best Waterfowl. |
| 3. Best Cockerel, any Variety. | 6. Best Turkey. |

Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Entry Fees—Members, 2s. 6d.; Non-Members, 4s.

LEGHORN—	Class	WYANDOTTE—	Class
<i>White</i>	1. Cock	<i>Gold or Silver</i>	35. Cock
	2. Hen		36. Hen
	3. Cockerel		37. Cockerel
	4. Pullet		38. Pullet
<i>Exchequer</i>	5. { Cock or	<i>White</i>	39. Cock
	6. { Cockerel		40. Hen
	7. { Hen or		41. Cockerel
	8. { Pullet		42. Pullet
<i>Any other Colour</i>	9. Cock	<i>Partridge</i>	43. { Cock or
	10. Hen		44. { Cockerel
	11. Cockerel		45. { Hen or
MINORCA	12. Pullet		46. { Pullet
	13. Cock	<i>Columbian</i>	47. { Cock or
	14. Hen		48. { Cockerel
	15. Cockerel		49. { Hen or
	16. Pullet		50. { Pullet
HAMBURGH	17. Cock	<i>Any other Colour</i>	51. { Cock or
	18. Hen		52. { Cockerel
	19. Cockerel		53. { Hen or
	20. Pullet		54. { Pullet
SCOTCH GREY	21. Cock	RHODE ISLAND RED	55. Cock
	22. Hen		56. Hen
	23. Cockerel		57. Cockerel
	24. Pullet		58. Pullet
PLYMOUTH ROCK—		SUSSEX—	
<i>Barred</i>	25. Cock	<i>Light</i>	59. Cock
	26. Hen		60. Hen
	27. Cockerel		61. Cockerel
	28. Pullet		62. Pullet
<i>Any other Colour</i>	29. { Cock or	<i>Any other Variety</i>	63. Cock
	30. { Cockerel		64. Hen
	31. { Hen or		65. Cockerel
	32. { Pullet		66. Pullet
ORPINGTON—		DORKING—	
<i>Black</i>	33. Cock	<i>Coloured</i>	67. Cock
	34. Hen		68. Hen
	35. Cockerel		69. Cockerel
<i>Any other Colour</i>	36. Pullet		70. Pullet
<i>Any Colour</i>			

¹ Given by the Proprietors of 'The Scottish Poultry News,' Aberdeen. The Bowl will become the property of the exhibitor who shall win it three times, not necessarily in succession.

Special Entry Forms for Poultry Classes.

* See Regulations 66 and 67.

DORKING—continued	Class	CROSS-BRED FOWLS FOR LAYING PURPOSES	Class
<i>Silver Grey</i>	65. Cock 66. Hen 67. Cockerel 68. Pullet		95. Hen 96. Pullet
SCOTS DUMPHY	69. Cock 70. Hen 71. Cockerel 72. Pullet	DUCKS— <i>Aylesbury</i>	97. Drake 98. Duck 99. { Drake (young) Duck (young)
INDIAN GAME	73. Cock 74. Hen 75. Cockerel 76. Pullet	<i>Orpington</i>	100. { Drake (young) Duck (young) 101. Drake 102. Duck 103. { Drake (young) Duck (young) 104. { Duck (young)
OLD ENGLISH GAME	77. Cock 78. Hen 79. Cockerel 80. Pullet	<i>Indian Runner</i>	105. Drake 106. Duck 107. Drake 108. Duck
BANTAM— <i>Game—Old English</i>	81. Cock 82. Hen	<i>Any other Variety</i>	109. Gander 110. Goose
<i>Game—Modern</i>	83. Cock 84. Hen	TURKEYS	111. Cock 112. Hen
<i>Other than Game</i>	85. Cock 86. Hen	TABLE POULTRY— (a) TABLE FOWLS— <i>Any pure Breed</i>	113. Cockerel 114. { Pair of Pullets 115. Cockerel 116. { Pair of Pullets 117. Cockerel 118. { Pair of Pullets
<i>Any Variety</i>	87. Cockerel 88. Pullet	<i>Game-Cross</i>	
ANY OTHER RECOGNISED BREED	89. Cock 90. Hen 91. Cockerel 92. Pullet	<i>Any other Cross</i>	
PURE BRED FOWLS FOR LAYING PURPOSES— <i>Any heavy breed</i>	93. { Hen or Pullet	(b) DUCKLINGS FOR TABLE PURPOSES— <i>Any Breed or Cross</i>	119. { Pair of Ducklings
<i>Any light breed</i>	94. { Hen or Pullet		

AMOUNT OF POULTRY PREMIUMS, £208, 5s.

Special Entry Forms for Poultry Classes.

* FUR-PRODUCING RABBITS

Judge: Allan Watson.

First Premium—FIFTEEN SHILLINGS; *Second Premium*—TEN SHILLINGS; *Third Premium*—FIVE SHILLINGS. In each Class in which there are less than four entries the Third Prize of Five Shillings will not be awarded. In addition to the Premiums, the Judges may award *one* Very Highly Commended, *one* Highly Commended, and as many Commended tickets in each Class as they consider justified by the number and merit of the entries.

Class.

1. Blue Beveren, Buck.
2. Blue Beveren, Doe.
3. Blue Beveren, Buck or Doe, under 5 months at first day of Show.
4. Chinchilla, Buck.
5. Chinchilla, Doe.

Class.

6. Chinchilla, Buck or Doe, under 5 months at first day of Show.
7. Havana, Buck or Doe.
8. Lilac, Buck or Doe.
9. Angora, Buck or Doe.
10. Any other variety of Fur-producing Rabbit, Buck or Doe.

Entry Fee—2s. 6d. each rabbit.

PRIZE MONEY BY SOCIETY £15

Special Entry Forms for Rabbit Classes.

* See Regulations on page 88.

HONEY, &c.

Judge: G. W. Avery

OPEN CLASSES

Class.	Entry Fees—2s. 6d. each.	Premiums.		
		1st.	2nd.	3rd.
1. Collection of Appliances suitable for a beginner's outfit for Bee-keeping. A card naming all the articles, along with the price at which they will be supplied for one year from date, to be fixed to the exhibit		20/-	15/-	10/-
2. Best and most complete Frame Hive for general use, with any improvements. Unpainted		20/-	15/-	10/-
3. Best and most complete Hive. Unpainted. Price not to exceed 35/-		20/-	15/-	10/-
4. Six Sections of Comb Honey, excluding Heather Honey		20/-	15/-	10/-
5. Six Sections of Heather Honey		20/-	15/-	10/-
6. Six Jars of Run or Extracted Light-coloured Honey, approximate weight 6 lb.		20/-	15/-	10/-
7. Six Jars of Run or Extracted Medium or Dark-coloured Honey, excluding Heather Honey, approximate weight 6 lb.		20/-	15/-	10/-
8. Six Jars of pressed Heather Honey in liquid form, approximate weight 6 lb.		20/-	15/-	10/-
9. Six Jars of Granulated Honey, approximate weight 6 lb.		20/-	15/-	10/-
10. Two shallow Frames of Comb Honey for extracting purposes		20/-	15/-	10/-
11. Products made with the aid of Honey. (Recipe to be attached, which will be treated as confidential)		20/-	15/-	10/-
12. Best display of Honey in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet. Weight of honey not to exceed 40 lb.		60/-	30/-	20/-
13. Best exhibit of not less than 1 lb. of Wax in any form		20/-	15/-	10/-
14. Best exhibit of not less than 1 lb. of Wax made into shapes for retail trade and over-counter trade. Convenience in packing to be taken into consideration		20/-	15/-	10/-
15. Observatory Hive with Queen and Bees—two or more frames		50/-	30/-	20/-
16. Observatory Hive with Queen and Bees—one frame		40/-	30/-	15/-

(Confined to Scottish Exhibitors.)

17. One Standard Frame of Comb Honey for extracting purposes	20/-	15/-	10/-
18. Six Sections of Comb Honey, excluding Heather Honey	20/-	15/-	10/-
19. Six Sections of Heather Honey	30/-	20/-	10/-
20. Six Jars of Run or Extracted Medium or Dark-coloured Honey, excluding Heather Honey, approximate weight 6 lb.	30/-	20/-	10/-
21. Six Jars of Run or Extracted Light-coloured Honey, approximate weight 6 lb.	30/-	20/-	10/-

Silver and Bronze Medals will be awarded by the Scottish Bee-Keepers' Association to the First and Second winners of the greatest number of points in Classes 4-21, calculated on the following basis: 1st prize, 3 points; 2nd prize, 2 points; 3rd prize, 1 point.

Championship Cup, value £5, 5s.—This cup has been gifted by the Rev. John Beveridge, M.B.E., B.D., Gartmore, and will be held for one year by the winner of the Silver Medal, ultimately becoming the property of the first competitor to score 100 points.

PRIZE MONEY BY SOCIETY	£47, 0s. 0d.
CONTRIBUTED BY SCOTTISH BEE-KEEPERS' ASSOCIATION	£10, 10s. 0d.
CHAMPIONSHIP CUP	£5, 5s. 0d.

Special Entry Forms for Appliances and Honey.

Should there be in any class three or less than three entries, the value of the first prize will be reduced to that of the second, the second to that of the third, and no third prize will be awarded.

RULES AND REGULATIONS.

1. All exhibits must be despatched in time to be delivered at the Showyard not later than 6 P.M. on Monday, the day before the opening of the Show. According to the railway regulations, exhibitors will require to pay return carriage and cartage when despatching. Return carriage-paid labels will be supplied by the Secretary, and must be addressed for the return journey, and have numbers of Classes on same. Non-compliance with this regulation will mean that the exhibit will be left in the Showyard. Boxes containing hives, jars, or sections must be screwed and not nailed, and the hives, bottles, and sections so placed that they can be lifted out and replaced without disturbing the packing.

2. The number of the exhibit will be sent by the Secretary (as entered on the card), and must be placed on every exhibit and on each detachable part of exhibit—viz., on every jar of Extracted Honey. The number must be gummed on the side of the jar at the foot and not on the bottom or cap. No goods will be allowed to be staged unless this rule is complied with.

3. No card trade mark, or name of the exhibitor may be placed upon any part of an exhibit. Every article exhibited must be the property of the exhibitor, and all honey must have been gathered in the natural way within Great Britain, Northern Ireland, and Irish Free State, by bees the property of the exhibitor.

4. Comb Honey must be glazed on both sides, to protect the honey from injury. If paper edging is used, it must be of such a width as to leave $3\frac{1}{2}$ inches by $3\frac{1}{2}$ inches of glass clear of the lace paper, or in any other neat way capable of easy removal by the Judges, in small boxes glazed on both sides, such as supplied by dealers.

5. All Run, Extracted, and Granulated Honey must be shown in the usual mercantile Glass Jars holding approximately 1 lb., except in Classes 12 and 13.

6. No exhibitor shall be allowed to take more than one prize in any one class.

7. The Judge shall be empowered to withhold prizes in case of insufficient merit.

8. Should there be in any class three or less than three entries, the value of the first prize will be reduced to that of the second, the second to that of the third, and no third prize will be awarded.

9. The Judge will commence his inspection at 10 A.M. on Tuesday, and the Bee Shed will be closed to the public during the judging.

10. Exhibits of Honey may be placed in their positions in the shed before the opening and removed at the close of the Show by exhibitors themselves or their representatives. In the event of neither the exhibitor nor a person with written authority from the exhibitor being present to place or remove the exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of the exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 P.M. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective exhibitors.

11. No lot can be removed from the yard till 5 P.M. on Friday, the last day of the Show.

12. The Society undertakes no responsibility for the receipt or despatch of exhibits, nor for any injury exhibits may sustain during the Show or otherwise.

13. Railway delivery charges from station to Showyard and back to be paid by exhibitor. See pp. 87 and 88.

* DAIRY PRODUCE

Judge: Alexander Garvie

No Exhibitor to show more than one lot in any Class

Entry Fees—Members, 5s.; Non-Members, 7s. 6d.

Classes	Premiums.				
	1st.	2nd.	3rd.	4th.	5th.
	£	£	£	£	£
1. Powdered Butter, not less than 8 lb.	4	2	1	-	-
2. Fresh Butter, three 1-lb. rolls	4	2	1	-	-
3. Cheddar Cheese, 56 lb. and upwards	9	5	3	2	1
4. Cheese, 14 lb. and under	5	3	2	1	-
Total				£45	

Special Entry Forms for Dairy Produce.

* See Regulations 75 and 76.

Railway delivery charges from station to Showyard and back to be paid by exhibitor. See pp. 87 and 88.

W O O L

Judge : Convener William Duncan

THREE Fleeces in each Entry. Each fleece must be shown entire. Entry Fee, 5s.

PURE BREED CLASSES

Class							Premiums.		
							1st.	2nd.	3rd.
							£	£	£
1. Ewe .	.	.	.	.	.	.	3	2	1
2. Hogg	.	.	.	.	.	.	3	2	1
*BLACKFACE.									
CHEVIOT.									
3. Ewe .	.	.	.	.	.	.	3	2	1
4. Hogg	.	.	.	.	.	.	3	2	1
BORDER LEICESTER.									
5. Ewe .	.	.	.	.	.	.	3	2	1
6. Hogg	.	.	.	.	.	.	3	2	1
HALF-BRED.									
7. Ewe .	.	.	.	.	.	.	3	2	1
8. Hogg	.	.	.	.	.	.	3	2	1
OXFORD DOWN.									
9. Ewe .	.	.	.	.	.	.	3	2	1
10. Hogg	.	.	.	.	.	.	3	2	1
SUFFOLK.									
11. Ewe .	.	.	.	.	.	.	3	2	1
12. Hogg	.	.	.	.	.	.	3	2	1
DORSET HORN.									
13. Ewe .	.	.	.	.	.	.	3	2	1
14. Hogg	.	.	.	.	.	.	3	2	1
† SHETLAND.									
15. Ewe .	.	.	.	.	.	.	3	2	1
16. Hogg	.	.	.	.	.	.	3	2	1
									£96
TOTAL PRIZE MONEY FOR WOOL, £96.									

Cheviot, Border Leicester, and Half-Bred Fleeces must be shown washed, and Blackface and Shetland Fleeces unwashed. All Fleeces must be shorn in the year of the Show from sheep bred and reared on, or regular stock of, the exhibitor's farm.

Railway delivery charges to and from Showyard must be paid by the exhibitor.

Special Entry Forms for Wool Classes.

* Blackface Ewe Fleeces shall be not less than 4½ lb., and Hogg Fleeces not less than 6 lb. in weight.

† An exhibit of Shetland Wool may comprise fleeces of one or more colours, but each fleece must be self-coloured.

Railway delivery charges from station to Showyard and back to be paid by exhibitor. See pp. 87 and 88.

RURAL INDUSTRIES

Judges : George M. Russell, Classes 1, 2, 3, and 4 ; Miss Bruce, Classes 5, 6, 15, 16, and 22 ; J. Mountford, Classes 7, 19, 20, 21, and 25 ; Miss Chart, Classes 8, 9, 17, 18, 24 and 27 ; Miss M. Jack, Classes 10, 11, 12, 13, 14, 23, and 26.

Entry Fees, 2s. 6d. each article.

OPEN CLASSES.

SHETLAND KNITTING.

Class.	<i>Exhibits to be made from Shetland Wool.</i>	Premiums.		
		1st.	2nd.	3rd.
1.	Fine Lace Goods (separate entry for each article)	£3	£2	£1
2.	Jumper, Sports Coat, or Dress—one or more colours	3	2	1
3.	Jumper or Sports Coat—all over Fair Isle	3	2	1
4.	Other Exhibits (separate entry for each article).	2	1	10/-

TWEEDS.

5.	Harris or other Tweed—Hand-spun, Hand-woven, and Vegetable-dyed	3	2	1
6.	Tweed—Mill-spun, Hand-woven	3	2	1

MISCELLANEOUS.

7.	Home-made Rug (wool)	3	2	1
8.	Embroidery—white (to be exhibited unwashed)	3	2	1
9.	" coloured	3	2	1
10.	Leather Gloves	2	1	10/-
11.	Specimen of Leather Work other than Gloves	2	1	10/-
12.	" Furcraft	2	1	10/-
13.	" Hand-painted Pottery	2	1	10/-
14.	" Basket Work (Rafia not eligible)	2	1	10/-
15.	Best collection of Vegetable-dyed Wools	2	1	10/-
16.	Home-spun Yarn—2-3 cuts	2	1	10/-
				£76 0

CONFINED CLASSES.

Open to Institutes and Members of Institutes in the whole of Scotland.

	Premiums.			
	1st.	2nd.	3rd.	
17. Gentleman's Chamois Gloves—with button	£3	£2	£1	
18. Specimen of Filet-lace	3	2	1	
				£12 0

Confined to Institutes and Members of Institutes in the North-Eastern Area of Scottish Women's Rural Institutes.

		Premiums.		
		1st.	2nd.	3rd.
19.	Rug—made from old material	20/-	10/-	5/-
20.	Rug—made from new material	20/-	10/-	5/-
21.	Specimen of upholstery—fitted box or footstool	20/-	10/-	5/-
22.	Socks—4-ply fingering	10/-	6/-	4/-

RURAL INDUSTRIES—continued.

	Premiums.		
	1st.	2nd.	3rd.
23. Basket—made from Raffia	15/-	10/-	5/-
24. Coloured Embroidery—Woollen	15/-	10/-	5/-
25. Padded Quilt—home made	20/-	10/-	5/-
26. Leather Handbag	15/-	10/-	5/-
27. Tea Cloth—with crochet border	15/-	10/-	5/-

Special Prizes to the Institutes winning the largest number of prizes in Classes 19 to 27 inclusive.

First Prize to count six points, Second Prize five points, Third Prize four points, V.H.C. three points, H.C. two points, and C. one point

£3	£2	£1	
			£20 0

PRIZE MONEY BY SOCIETY £76 0

CONTRIBUTED BY THE CENTRAL COUNCIL OF SCOTTISH WOMEN'S

RURAL INSTITUTES FOR THE CONFINED CLASSES £32 0

NOTE.—(a) No exhibit may be entered in more than one Class.

(b) An exhibit which has been awarded a First Prize at a Show of this Society cannot again be entered for competition in the same class.

REGULATIONS.

1. The Competition, except where otherwise stated, is open to competitors from all parts of Great Britain, Northern Ireland, and Irish Free State. Societies or Institutes, as well as individuals, shall be allowed to compete. An exhibit which has won a First Prize at a Show of this Society cannot again be entered for competition in the same class.

2. Every exhibit must be the work either of the Exhibitor or of a member of the exhibiting Society or Institute.

3. An entry fee of 2s. 6d. for each exhibit is payable at the time of entry.

4. Exhibits will be received in the Showyard not later than 8 p.m. on Monday, the day before the opening of the Show. Judging will commence at 9.30 a.m. on Tuesday. The section will be closed to the public during the judging. Exhibits shall not be removed till after the close of the Show.

5. Exhibits shall be entirely at the risk of exhibitors, who shall be solely responsible for delivery and removal of their own exhibits. In the event of neither the exhibitor nor a person with written authority from the exhibitor being present to place or remove exhibits, these will be placed and removed by men hired and paid by the Society; but this will be done on the understanding that the men are hired to do the work on behalf of the exhibitors and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. A receipt signed by the exhibitor, on a form to be issued by the Secretary, must be delivered before any exhibit is handed over to the exhibitor or his or her representative.

6. Exhibitors shall be allowed to place with their exhibits a notice indicating where (in the Showyard or elsewhere) similar articles may be purchased.

7. Exhibits must not be sent to the Society's Office previous to date of Show. Labels, &c., will be posted to Exhibitors about fourteen days prior to the Show.

8. **Railway delivery charges from station to Showyard and back to be paid by exhibitor. See pp. 87 and 88.**

Special Entry Forms for Rural Industries Section.

HORSE SHOEING

Judges : William Brown, M.R.C.V.S. ; Robert Hall ; George Littlejohn.

Open to Shoeing-Smiths from any part of Great Britain, Northern Ireland, and Irish Free State.

Horses provided for this Competition cannot be entered in any other Class.

THURSDAY, 26TH JULY.

Class 1.—FARM HORSES (Open Class).

1st Prize, £5 and Clock.*	6th Prize, £2.
2nd Prize, £5 and Canteen of Cutlery.†	7th Prize, £2.
3rd Prize, £5 and Gold Medal.‡	8th Prize, £1.
4th Prize, £4 and Gold Medal.§	9th Prize, £1.
5th Prize, £3.	

FRIDAY, 27TH JULY.

Class 2.—FARM HORSES (Juniors under Twenty-five Years of Age).

1st Prize, £5 and Gold Watch.**	3rd Prize, £2 and Gold Medal.‡
2nd Prize, £3 and Canteen of Cutlery.†	4th Prize, £1.

* Clock given by the Scottish Iron and Steel Co., Ltd., Glasgow.

** Gold Watch given by Messrs William Martin, Sons, & Co., Coatbridge.

† Canteens of Cutlery given by Messrs Neilson & Cleland, Ltd., Coatbridge.

‡ Gold Medals given by the Mustad Nail Company.

§ Gold Medal given by Capewell Horse Nail Company.

PRIZE MONEY BY SOCIETY	£24
CLOCK AND £10 BY THE SCOTTISH IRON & STEEL CO., LTD., GLASGOW	£15
GOLD WATCH AND £5 BY MESSRS WILLIAM MARTIN, SONS, & CO., COATBRIDGE	£10
CUTLERY BY MESSRS NEILSON & CLELAND, LTD., COATBRIDGE	£8
GOLD MEDALS BY MUSTAD NAIL CO.	£4
GOLD MEDAL BY CAPEWELL HORSE NAIL CO.	£2

1. Entries must be made with the Secretary not later than 31st May. Entry Fee, 2s. 6d. for each Class. Entry Forms may be had on application.

2. The Competition will take place in the Showyard, and will be decided by points, time being taken into consideration. Each Competitor must make and fix one fore and one hind shoe, having previously taken off the old shoes. The shoes must be fullered, with low calkins, and with toe-pieces on hind shoes only. The use of files and wire brushes is not permitted. Each Competitor must bring his own tools, nails, and a striker. The striker will not be allowed to touch the horse's hoof. The local Blacksmiths' and Farriers' Association will provide forges and anvils. The horses to be shod will be provided by the Association. Forges and horses will be balloted for.

3. Any Competitor who does not attend at the Horse-Shoeing Stance and answer to his name half an hour before he is due to compete will be debarred from competing.

4. The Competitor and his striker will be admitted to the Yard free of charge on the day of Competition on presentation of tickets which will be sent to the Competitor for the purpose.

The Waverley horse-shoe iron to be used in the Open Class, and the Dundryvan horse-shoe iron to be used in the Junior Class, will be supplied by Messrs Neilson & Cleland, Ltd., Coatbridge, who will also provide the necessary smithy coal.

Special Entry Forms for Horse-Shoeing Classes

LIVE STOCK JUDGING COMPETITION.

1. The Society will hold a Live Stock Judging Competition on Thursday, 26th July, commencing at 10.30 A.M.

2. The Competition shall be open to all persons not exceeding 25 years of age at the date of the Competition.

3. Teams from Agricultural Colleges or from Young Farmers' Clubs in Scotland shall be allowed to compete. The members of these teams shall also enter as individual Competitors. Five members shall form a team.

4. Entries must be lodged with the Secretary of the Highland and Agricultural Society not later than 10 A.M. on Tuesday, 10th July. An entry fee of 2s. 6d. shall be paid by each Competitor. Entries of teams must be made in the same way, but no additional fee shall be charged for a Team over and above the fee of 2s. 6d. for each individual member.

5. The Stock to be judged shall consist of—

(a) Cattle (three classes)	.	.	.	{ Shorthorn.
				{ Aberdeen-Angus.
				{ British Friesian.
(b) Horses (two classes)	.	.	.	{ Clydesdales.
				{ Blackface.
(c) Sheep (three classes)	.	.	.	{ Cheviot.
				{ Border Leicester.

There will be four animals in each class. The animals to be judged shall be chosen by the Society's Stewards. The Society reserves the right to modify the nature of the classes should difficulty arise in finding suitable material amongst the animals exhibited at the Show.

6. In Judging, breed type shall be taken into account. All stock shall be considered free from acquired blemishes or unsoundness. The Competitors shall judge in groups, and ten minutes shall be allowed for the judging of each Class.

7. Prizes shall be awarded as follows :—

Individual Competition	.	.	.	£5, £4, £3, £2, £1.
Team Competition—				
1st	.	.	.	£10 and 5 Medium Silver Medals.
2nd	.	.	.	£5 and 5 Medium Bronze Medals.
Special Prize for College				
team placed highest in				
competition	.	.	.	£5.

The Society reserves the right to reduce the number of prizes in the event of there being less than twenty Competitors in the individual Competition and less than three teams in the team Competition.

8. Competitors are forbidden to discuss the Stock with each other, or with any other person, until the conclusion of the whole Competition.

9. The method of awarding points shall be decided by the Directors of the Society, and their decision in all matters relating to the Competition shall be final.

ABSTRACT OF PREMIUMS.

GIVEN BY THE SOCIETY.

Cattle	£1259	0	0
Horses	851	4	0
Jumping Competitions	207	0	0
Sheep	557	0	0
Goats	36	0	0
Pigs	211	0	0
Poultry	208	5	0
Fur-Producing Rabbits	15	0	0
Honey, &c.	47	0	0
Dairy Produce	45	0	0
Wool	96	0	0
Rural Industries	76	0	0
Horse Shoeing	24	0	0
Stock Judging Competition	35	0	0
Medals to Breeders, &c.	30	0	0
Prizes for Timber ¹	40	0	0
	<u>£3737</u>	<u>9</u>	<u>0</u>

CONTRIBUTED PRIZES, CUPS, &c.

Champion Medals	31	0	0
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CATTLE.

*Paisley Perpetual Gold Challenge Cup	£300	0	0
*The late Mr William Duthie, Collynie, Tarves	150	0	0
*Mr Emilio R. Casares, jun., London	50	0	0
The Shorthorn Society (and 2 Medals)	40	0	0
Mr Robert W. Smith, M.P., Silver Cup	15	15	0
*Fife and Kinross Perpetual Gold Challenge Cup	200	0	0
*The late Sir George Macpherson Grant, Bart.	50	0	0
*The late Sir John Macpherson Grant, Bart.	50	0	0
*Mr Falconer L. Wallace—Silver Cup	50	0	0
Aberdeen-Angus Cattle Society	10	0	0
*Galloway Cattle Society—Dr Gillespie Memorial Trophy	50	0	0
The Dun and Belted Galloway Cattle-Breeders' Association	20	0	0
*Mrs Brown, Kirkbrec, Glasgow—Knockbrec Challenge Cup	50	0	0
*Highland Cattle Society of Scotland	89	5	0
*Cowhill Champion Cup	30	0	0
Ayrshire Cattle Herd-Book Society	20	0	0
British Friesian Cattle Society	64	0	0
*Lady Rachel Workman MacRobert—Champion Bell	52	10	0
*Lt.-Colonel Charles Brook—Kinmount Challenge Cup	50	0	0
Red Poll Cattle Society	25	0	0
	<u>1366</u>	<u>10</u>	<u>0</u>

HORSES.

*Clydesdale Horse Society—Cawdor Challenge Cups	£105	0	0
Marquess of Aberdeen and Temair, K.T.—Silver Cup	10	0	0
*Renfrewshire Perpetual Gold Challenge Cup	250	0	0
"William Taylor" Memorial Committee	10	0	0
Shire Horse Society	46	16	0
Hunters' Improvement and National Light Horse Breeding Society	10	0	0
Board of Agriculture for Scotland	40	0	0
National Pony Society	10	0	0
The Highland Pony Society	10	0	0
A past President of the Shetland Pony Stud-Book Society	10	0	0
Colonel Robert W. Walker	10	0	0
"Four Lovers of the Breed" (Shetland Ponies)	10	0	0
Shetland Pony Stud-Book Society (Medal).			
*Glasgow Challenge Cup	50	0	0
	<u>571</u>	<u>16</u>	<u>0</u>
Carry forward	£5706	15	0

¹ Grant to Royal Scottish Arboricultural Society for Prizes for Timber.

* Challenge Prizes.

ABSTRACT OF PREMIUMS—*continued*

Brought forward	.	.	.	£5706 15 0
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SHEEP.

*Cheviot Sheep Society—Borthwick Challenge Cup	.	.	£25 0 0	
Tweeddale Gold Medal	.	.	25 0 0	
Society of Border Leicester Sheep-Breeders	.	.	20 0 0	
*Challenge Bowl for Oxford-Down Sheep	.	.	50 0 0	
Oxford-Down Sheep-Breeders' Association	.	.	21 0 0	
Suffolk Sheep Society	.	.	15 0 0	
Dorset Horn Sheep-Breeders' Association	.	.	5 0 0	
				161 0 0

GOATS.

Board of Agriculture for Scotland	.	.	£12 0 0	
*Lord Dewar—Silver Cup	.	.	21 0 0	
*Mrs S. Macdonald, Garrochty—Silver Cup	.	.	10 0 0	
Marchioness of Aberdeen and Temair—Silver Jug	.	.	5 0 0	
				48 0 0

PIGS.

National Pig-Breeders' Association	.	.	£21 0 0	
*Large Black Pig Society—Silver Cup	.	.	12 12 0	
Large Black Pig Society (and 2 Medals)	.	.	25 0 0	
Large White Ulster Pig Society	.	.	20 0 0	
				78 12 0

POULTRY.

*Proprietors of 'The Scottish Poultry News,' Aberdeen	.	.	.	50 0 0
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HONEY.

The Scottish Bee-Keepers' Association	.	.	£10 10 0	
*Rev. John Beveridge, M. B. E., Championship Cup	.	.	5 5 0	
				15 15 0

RURAL INDUSTRIES.

Central Council of Scottish Women's Rural Institutes	.	.	.	32 0 0
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HORSE SHOEING.

The Scottish Iron & Steel Co., Ltd., Glasgow (Clock and £10)	£15 0 0	
Messrs W. Martin, Sons, & Co., Coatbridge (Gold Watch and £5)	10 0 0	
Messrs Neilson & Cleland, Limited, Coatbridge (Cutlery)	8 0 0	
Mustad Nail Co. (2 Gold Medals)	4 0 0	
Capewell Horse Nail Co. (Gold Medal)	2 0 0	
		39 0 0
		£6131 2 0

* Challenge Prizes.

JOHN STIRTON, *Secretary.*3 GEORGE IV. BRIDGE,
EDINBURGH, *March 1928.*

SILVER MEDALS FOR NEW OR IMPROVED IMPLEMENTS.

See Regulations on page 84.

FORESTRY EXHIBITION.

For information as to above, apply to the Secretary, Royal Scottish Arboricultural Society, 8 Rutland Square, Edinburgh.

WOOL DEMONSTRATIONS.

Arrangements are being made for Demonstrations on Wool, to be held in the Wool Shed on Wednesday, Thursday, and Friday, 25th, 26th, and 27th July.

**The Society's Show for 1929 will be held
at Alloa.**

MEMBERS ADMITTED SINCE THE LIST WAS PUBLISHED IN MARCH 1927.

ARRANGED ACCORDING TO SHOW DISTRICTS.
ELECTED 1ST JUNE 1927 AND 4TH JANUARY 1928.)

1.—GLASGOW DIVISION

ARGYLL

- Admitted
1928 Craig, D. L., Farm Manager, Carskley,
Southend, Argyll
1928 M'Lean, Malcolm, Kirkapoll Farm, Tree
1928 MacNaughton, Mrs Mary B., Ardachear-
anbeg, Glendaruel
1928 MacNaughton, Peter, Ardachearanbeg,
Glendaruel
1927 Parsons, Mrs Mabel M., Asknish, Loch-
gair, Argyll

AYR

- 1928 Alexander, William R., Dairy School,
Kilmarnock
1928 Armstrong, James, St Clair, Barassie,
by Troon
1927 Eadie, G. Patrick, Hazelbank Farm,
Dunlop
1928 Glen, John, Holmes Farm, Kilmarnock
1927 Kay, Robert Russell, B.Sc., Advisory
Agricultural Officer, Holmes Farm,
Kilmarnock
1927 Kerr, William J., Greenridge Farm,
Kilbirnie
1927 Neilson, Mrs R. T., Towans, Prestwick
1928 Osborne, James, Holmes Farm, Kil-
marnock
1928 Smillie, D. Murray, Dairy School, Kil-
marnock
1928 Struthers, James, Templehill, New-
mills
1927 Tannock, Robert, Place, Kilmaurs
1927 Wallace, Miss Matilda S., Riverside,
Hurlford
1928 Wardrop, Robert L., jun., West Polkelly,
Stewarton

BUTE

- 1927 Macdonald, Mrs Mary A., Garrochty,
Kingarth, Isle of Bute

LANARK

- 1927 Aitken, William, Church Street,
Chapelton
1927 Allan, Thomas D., Parkhouse, Thanker-
ton
1927 Auld, David, Rosebank Dairy, Main
Street, Cambuslang
1927 Crippen, C. F. L., 15 Napierhall Street,
Glasgow, N.W.
1927 Currie, John, 7 and 9 Hallcraig Street,
Airdrie

- 1927 Elder, George, Yardhouses, Carnwath
1928 Findlay, Stewart, Springhill, Baillieston
1928 Forrest, James, 51 Stewart Street,
Carlisle
1927 Gibson, Adam, 14 Drumbathie Terrace,
Airdrie
1928 Giffen, A. S. (Vacuum Oil Co., Ltd.),
400 East Cathedral Street, Glasgow,
C.1.
1927 Gourlay, Archibald Dennis, Erdenalan,
Thorntonhall
1927 Harvie, James, Auchrobert, Leamaha-
gow
1927 Hay, Archibald, 59 Exeter Drive,
Partick
1927 Houldsworth, Captain James F.
Hamilton, Coltness, Wishaw
1928 King, John, Lawmuir Farm, Bellshill
1927 M'Callum, William, Huntly Bank,
Lanark
1927 M'Gregor, Robert C. (P. & R. Fleming
& Co.), 29 Argyle Street, Glasgow
1927 Mackenzie, D., 22 Fulton Drive, Partick,
W.
1927 Paterson, Robert, Foulis Farm,
Wishaw
1927 Reynard, M. A., 266 George Street,
Glasgow
1928 Shankie, John, Symington Mains, Sym-
ington
1928 Stewart, John Robert, c/o National
Farmers' Union Mutual Insurance
Society, 124 St Vincent Street,
Glasgow
1927 Struthers, John, Anston, Dunsyre
1927 Thomson, Tom N., Broomfield, Muir
head, Chryston
1928 Turner, A. G. (Country Gentlemen's
Association), 8 Athole Gardens, New-
lands, Glasgow
1927 Young, Kenneth M., 38 Elliot Street,
Glasgow

RENFREW

- 1927 Airth, A. L., 2 Hillington Gardens,
Cardonald, Glasgow
1927 Blair, David, Cartside Farm, Milliken
Park
1928 Coats, Miss Evelyn, Corsebar, Paisley
1928 Davie, Archibald, Bogton Farm, Muir-
end, Cathcart
1928 Lawrence, W. H., 20 Darnley Street,
Pollokshields, Glasgow
1928 Leggat, Hugh, Arthurlie Park, Barrhead
1927 M'Kendrick, Mrs, Dennistoun Farm,
Kilmacoll
1927 Paton, W. A., West of Scotland Angora
Wool Farm, The Loaning, Johnstone

2.—PERTH DIVISION

FIFE

- 1927 Anderson, Alexander, Hatton, Lundin Links
 1928 Anderson, Alexander, Hatton, Lundin Links
 1927 Calder, Allan Macleod, 113 High Street, Kirkcaldy
 1927 Calder, Thomas M., Corston Mill, Strathmiglo
 1927 Caistairs, Alexander, Carnbee Farm, Pittenweem
 1928 Cathil, Archibald J., Cunnoquhie Mill, Ladybank
 1928 Grant, Charles, Wester Clune, by Dunfermline
 1927 M'Intosh, Robert Bisset, Berryhill, Newburgh
 1927 Matthew, Thomas, sen., Collydean, Markinch
 1927 Miller, James O. S., Logie, Cupar-Fife
 1928 Smith, James Meldrum, East Friarton, Newport
 1927 Stewart, Hugh L., Woodburne, Ceres
 1928 Stirrat, John, Higham, Newburgh
 1927 Taylor, David, Hill of Tarvit, Cupar-Fife
 1927 Thom, Mrs Kathleen Lorna, Wellsgreen, Windygates
 1928 Thomson, William Alexander, Newton Farm, Markinch
 1928 Walker, William, Cairnichall, Newburgh
 1928 Whyte, Miss Jean B., 23 Christie Street, Dunfermline
 1927 Wilson, Harry M'Intyre, M.R.C.V.S., 134 Bonnygate, Cupar-Fife

FORFAR

(WESTERN DISTRICT)

- 1927 Inglis, William, 11 Roods, Kirriemuir
 1928 Miller, Andrew, Laws, Kingennie
 1928 Moncur, James Ogilvy, Kinalty, Lindertis, Kirriemuir

- 1928 Nicoll, Richard, Whitehouse, Tealing, Dundee
 1927 Price, Professor L. Turton, 21 Windsor Street, Dundee
 1928 Webster, Alexander, Gowan Bank, Montrose Road, Forfar

KINROSS

- 1927 Anderson, John, The County Agricultural Store, Milnathort
 1927 Veitch, David, jun., Balneathol, Kinross

PERTH

(PERTH SHOW DISTRICT)

- 1927 Boyce, Robert, 6 Strathmore Street, Perth
 1928 Brown, James, Kirklandbank, Alyth
 1928 Brown, Thomas, Kirklandbank, Alyth
 1927 Constable, Miss Marjorie, Soilzarie, Blairgowrie
 1928 Cuthbert, J. P., M.C., Barclayhills, by Perth
 1927 M'Donald, William, 'The Farming News,' 36 Tay Street, Perth
 1928 M'Gregor, John S., Peterhead Farm, Gleneagles
 1927 M'Kerchar, Donald, c/o M'Kenzie, 27 Queen Street, Craigie, Perth
 1927 Muirhead, Charles, Glentulchan, Glenalmond (32 Inverleith Place, Edinburgh)
 1927 Patterson, George, 182-184 High Street, Perth
 1927 Pollock, Archibald Jackson, Hole o' Clean, Glencarse
 1927 Scone, Lord, Scone Palace, Perth
 1927 Thompson, David, Pitnacree Farm, Alyth
 1928 Watson, James, Cranflat, Stanley
 1928 Westwood, James, Dalreoch, Dunning
 1928 Westwood, William, Dalreoch, Dunning

3.—STIRLING DIVISION

CLACKMANNAN

- 1927 Alexander, Allan, Lawmuirs, Dollar
 1927 M'Gregor, Charles, Island Farm, Alloa
 1928 Noble, R., Manager, Tullibody Land Co., Tullibody, Cambus

DUMBARTON

- 1928 Shaw, James, Barrs Farm, Cardross

PERTH

(STIRLING SHOW DISTRICT)

- 1927 Abernethy, Peter, High Street, Dunblane
 1927 Blair, John, Thornhill, by Stirling

- 1928 Bowser, Mrs D. C., Overdale, Dunblane
 1927 Broadfoot, Abram, Sunnyside, Dunblane
 1927 Campbell, James, Wester Ballindalloch, Comrie
 1927 Holmes, A. Mitchell, Deanston Farm, Doune
 1928 Lindsay, Hugh Paterson, Meadowflats, Dunblane
 1927 M'Gregor, Alexander, Kirklane, Blair Drummond
 1927 M'Naughton, John, jun., Gannochan, Braco
 1927 Marquis, T. N. H., Drumloist, Callander
 1928 Maule, John, Cambusbeg, Callander
 1927 Scouler, Alexander, Main Street, Thornhill
 1927 Scouler, John L. W., Main Street, Thornhill
 1927 Stirling, Hon. Mrs. Keir, Dunblane

STIRLING

- 1928 Aitken, Miss Hilda, Eriden, Falkirk
 1928 Austin, Alexander, Ardocholle, Bridge of Allan
 1928 Beaton, Archibald, Bunessan, Buchlyvie
 1927 Black, William A. B., Butcher, Old Polmont
 1928 Crawford, Robert, Wester Cornton, Bridge of Allan
 1928 Johnston, Robert, Dykehead Farm, Slamannan
 1927 Kirkland, William, Kipdowrie, Buchlyvie
 1928 Lee, Captain A. J. (Scottish Poultry Farmers' Association), 64 Murray Place, Stirling

- 1927 M'Gregor, William, Broom Farm, Stirling
 1928 Mailer, J. Macgregor, 6 Maunse Crescent, Stirling
 1928 Monteth, Mrs. The Island, Bothkennar, Falkirk
 1928 Oliver, John M., Allan Terrace, Bridge of Allan
 1927 Orr, James, Kepculloch, Balforn Station
 1927 Raine, Thomas H., 3 Dalmorglen Park, Stirling
 1927 Ramage, Mrs James, Lathallan Road, Polmont
 1927 Scott, Alexander, North Greens, Airth
 1928 Stewart, Charles, 19 Wallace Street, Grangemouth
 1928 Wilkie, John, Glenavon Hotel, Grangemouth

4.—EDINBURGH DIVISION**EDINBURGH**

- 1927 Alexander, John, Newbigging Farm, Rosewell
 1927 Allison, William Slimmon, 20 Melville Street, Edinburgh
 1927 Anderson, Robert Gayler, c/o Robert Edgar & Co., Ltd., 9 George IV. Bridge, Edinburgh
 1927 Barrie, Robert, West End, West Calder
 1927 Bonar, Miss Mary I., Eldinbrae, Lasswade
 1928 Brown, Esmond, M.R.C.V.S., 92 Spottiswoode Street, Edinburgh
 1928 Brownlee, Alex., B.Sc., M.R.C.V.S., Alderston, Mid-Calder
 1927 Bryce, Alexander, New Pentland, Loanhead
 1927 Burton, Miss M., The Gardens, New Saughtonhall, Polton
 1923 Carmichael, John G., 111 Dairy Road, Edinburgh
 1927 Cockburn, Malcolm James, 48 Murrayfield Gardens, Edinburgh
 1927 Craig, James, 2 Ashley Terrace, Edinburgh
 1927 Crear, Myles Wilson, 175 Morningside Road, Edinburgh
 1928 Dickson, Walter (Orrock & Son, Ltd.), 15 Victoria Street, Edinburgh
 1927 Dimarco, Umberto, 26 Trinity Crescent, Leith
 1928 Douglas, George, c/o W. J. Robertson & Co., Ltd., Waverley Oil Mills, West Fountainbridge, Edinburgh
 1927 Dunlop, Quintin, Buteland, Balerno
 1927 Fergus, James Ormiston, 52 Lorne Street, Leith
 1927 Gardner, William, Boll o' Bere, Balerno
 1927 Goodall, Alexander, 4 Keith Crescent, Blackhall, Edinburgh
 1927 Graham, Alexander, Fountainside, Gorebridge
 1928 Hardie, A. Murray, 20 George Street, Edinburgh
 1928 Henderson, J. Ranson, Mount Lothian, Eskbank
 1928 Higgins, Edward, 27 Rutland Street, Edinburgh
 1927 Hinton, S. O., Ladylands, Corstorphine
 1927 Hives, George William, 17 Craighouse Terrace, Edinburgh
 1927 Hunter, James, 19 St Andrew Square, Edinburgh

- 1928 Kay, James Cunningham, Grove Cottage, Stow
 1928 King, William, Vogrie Maina, Gorebridge
 1928 Lawrie, Alexander, Mayfield House, 4 Lindsay Road, Leith
 1928 Lindsay, Adam, 20 Bonaly Road, Edinburgh
 1927 M'Call, George G., 18 George Square, Edinburgh
 1928 M'Intyre, Hugh, Calder Bank Dairy, Mid-Calder
 1928 Mackay, William (Mackay Brothers & Co.), 33 Hanover Street, Edinburgh
 1928 Mackenzie, Lachlan Paterson (Mackenzie & Moncur, Ltd.), 5 Polwarth Terrace, Edinburgh
 1928 M'Laren, George Stewart, F.A.L.P.A., A.I.A.S., 76 Findhorn Place, Edinburgh
 1928 M'Phail, John Austin (James Carter & Co.), 30 Starbank Road, Trinity, Edinburgh
 1927 Miller, Robert Barr, jun., Loquharriot, Gorebridge
 1927 Moffat, Miss Elizabeth Walker, 7 Blantyre Terrace, Edinburgh
 1927 Morton, John A., c/o Messrs Lindsay, Howe & Co., W.S., 32 Charlotte Square, Edinburgh
 1927 Munro, Thomas M., 20 Merchiston Gardens, Edinburgh
 1927 Murray, Alexander, 137 George Street, Edinburgh
 1928 Nisbet, North More, The Drum, Gilmerton
 1927 Pryde, John, Gorebridge
 1927 Richardson, Dr G. Y., 6 Randolph Crescent, Edinburgh
 1927 Richardson, Mrs George, 6 Randolph Crescent, Edinburgh
 1928 Ritchie, John Neish, Public Health Chambers, Johnston Terrace, Edinburgh
 1927 Sawers, Thomas, 8 Cumin Place, Edinburgh
 1928 Simpson, Dr J. C., Gracemount Farm, Liberton
 1927 Simpson, Robert Gemmill, Monktonhall, Musselburgh
 1927 Stirrat, James R., Ladylands, Corstorphine
 1927 Sutherland, J. B., 34 St Andrew Square, Edinburgh
 1927 Thornton, Miss Jenny, Whauphill, Hermand, West Calder

- 1927 Wilson, James, F.L.A.S., Scottish Command Headquarters, Edinburgh
 1927 Wilson, Stewart Thomas, Capielaw, Rosewell
 1927 Wilson, Walter Melville, Heathville, Penicuik

EAST LOTHIAN

- 1928 Barrie, William T., "Haymont," East Linton
 1927 Brooks, John, Kilduff Mains, Drem
 1927 Dodds, William, Edinburgh Road, Tranent
 1928 Dudgeon, Alexander, 1 Florabank Road, Haddington
 1927 Elder, Thomas, jun., Longniddry
 1927 Kinnaid, John, jun., Papple, Haddington
 1927 Pace, Robert Ferrier, Ormiston Mains, Ormiston
 1928 Porter, Mrs. Agnes Marshall, Tanderlane, Haddington
 1928 Robb, William, Cornhill, Ballencrieff, Longniddry
 1928 Simpson, William Ramsay, Hedderwick, Dunbar

- 1927 Turnbull, J. S., Dunglass Estate Office, Cockburnspath
 1927 Wylie, Alexander, Castle mains, Gifford

WEST LOTHIAN

- 1927 Braes, James, Champany, Linlithgow
 1927 Brown, Andrew R., Greenhill, Fauldhouse
 1927 Cavanagh, James, East Burnside, Broxburn
 1927 Cochran, John, Waterstone, Uphall
 1927 Cochran, William, Kingseavil, Linlithgow
 1928 Kirk, Thomas, Northbank, Bo'ness
 1928 Kirk, Thomas, jun., Borrowston, Bo'ness
 1928 Kirk, William, Northbank, Bo'ness
 1927 Lawson, William, Threemiletown, Linlithgow
 1928 Livingston, Frederick James, Redlands, Bo'ness
 1928 M'Blain, George, Muirhouses, Bo'ness
 1927 Mann, John, Birkenshaw, Annadale
 1927 Meek, Robert, 27 Main Street, Whitburn
 1927 Orr, Thomas, Loan Farm, Blackridge
 1928 Sibbald, James Gray, Cult, Whitburn
 1927 Torrancer, R., East Whitburn Farm, Whitburn

5.—ABERDEEN DIVISION

ABERDEEN

- 1928 Abernethy, David, Bogloch, Lumphinan
 1928 Abernethy, Frank, Borrowstone, Kincardine O'Neil
 1928 Addison, Fred, Merchant, Inverurie
 1928 Aiken, George, 49 Upper Kirkgate, Aberdeen
 1927 Aitken, Archibald, Blackdams, Echt
 1928 Anderson, Alexander, Green of Savoch, Auchnagatt
 1928 Anderson, Alexander, Inspector's Offices, Old Bourtie, Inverurie
 1928 Ballantyne, James (Gordon Graham & Co.), Market Street, Aberdeen
 1928 Barclay, James, Pots of Rayne, by Inch
 1927 Barclay, James R., 91 Union Street, Aberdeen
 1928 Barnett, Robert K., Tippetty, Ellon
 1928 Barr, John, Estates Office, Glen Tanar, Aboyne
 1928 Barron, Edward, Balnakettle, New Machar
 1928 Baxter, William, West Piddoulzie, Auchterless
 1928 Bean, John, Dubston, Inverurie
 1928 Beaton, Frank, 39 Powis Terrace, Aberdeen
 1928 Beddie, John, Bridgend, Longside
 1928 Begg, Charles, Mains of Druminnor, Rhynie
 1928 Birse, David, Sliderrybrae, Ballogie, Aboyne
 1928 Bonnyman, James, Belnaboth, Glass
 1928 Booth, Alexander, Ednie, St Fergus
 1928 Booth, James, Dens, Peterhead
 1928 Brebner, Eric, Home Farm, Craibstone, Bucksburn
 1928 Brown, Alexander W., Ellerslie, Bankhead
 1928 Brown, James, Kennerty Smiddy, Peterculter

- 1928 Brown, William John, 20 Hosefield Avenue, Aberdeen
 1928 Brownie, David, South Fernet, Skene
 1928 Brownie, William, Old Boghead, Rothie-Norman
 1928 Buchan, Adam, Millden, Balmedie
 1928 Cameron, John, Cornullich, Dinnet
 1928 Cameron, John, Kinkell, Inverurie
 1928 Campbell, Archibald W., Mains of Auchmunziel, New Deer
 1928 Campbell, Joseph, Easter Cardno, Fraserburgh
 1928 Carle, Alexander, Blackburn Hotel, Kinellar
 1928 Carr, James, Midstrath, Ballogie, Birse, Aboyne
 1928 Cassie, John, Portaton, Inverurie
 1928 Catto, Peter, Mill Farm, Lomnay
 1928 Chalmers, John, Boghead, Asleid, New Deer
 1928 Chalmers, Lawrence E. F., Hillhead, Lethenty, Inverurie
 1928 Cheyne, James, Inchgreen, New Deer
 1928 Clark, James, Manager, Home Farm, Duncuch
 1928 Conn, Alexander, Blackhall, Inverurie
 1928 Cooper, John, Overhall, Inch
 1928 Coutts, William, Fontenoy, Learney, Torphins
 1928 Cowie, John, Whiteinsches, Wartle
 1928 Cowie, Peter, Brankanentum, Inch
 1928 Craik, William, of Bridgend, Turriff
 1928 Crawford, Lt.-Col. J. Norman, of Rothie, Rothie-Norman
 1928 Crichton, Arthur, The Rowett Research Institute, Bucksburn
 1928 Cruickshank, Alexander, Brunthall, Turriff
 1927 Cruickshank, Charles, 325 Hardgate, Aberdeen
 1928 Cruickshank, George, Ardmiddle Mains, Turriff
 1928 Davidson, Alexander, Colithie, Gartly

- 1928 Davidson, Alexander, Mundurno, Bridge of Don, Aberdeen
 1928 Davidson, George A., 3 High Street, Inverurie
 1928 Davidson, Colonel H. A., Dunnydeer, Inch
 1928 Davidson, Ian, Newseat, Peterhead
 1928 Davidson, James, Milton, Ardluthen, Ellon
 1928 Davidson, Robert, Middleton of Blackford, Rothie-Norman
 1928 Davidson, William, Moreless, Turriff
 1928 Davidson, William, Moss-side, Old Meldrum
 1928 Dawson, Fred, Groddie, Dinnet
 1928 Dawson, Joseph, Tillylair, Lumphanan
 1928 Dinnie, James, Marywell, Ballogie, Aboyne
 1928 Dinne, Robert, Birsebeg, Aboyne
 1928 Donald, James, jun., Balvack, Monymusk
 1928 Donald, John, Invercamey, Fyvie
 1928 Donald, Pat. R., Burnside, Fyvie, by Old Meldrum
 1928 Donald, Walter, Corsiestone, Huntly
 1928 Downie, Charles, Auchnabo, Slains, by Ellon
 1928 Duff, James, Easter Boghead, Glass
 1928 Duguid, Harry, Nether Kingseat, New Machar
 1928 Duguid, James, Pike Farm, Inch
 1928 Duguid, John, Newton, Inch
 1928 Duguid-McCombie, Col. W. M., of Easter Skene, Skene
 1928 Duncan, Robert, Aethath, Sauchen
 1928 Dunn, Miss Margaret J. A., M.A., B.Sc., 5 Queen's Road, Aberdeen
 1928 Durno, Ferguson, Kirkhill, Old Meldrum
 1928 Durno, James, North Balnoon, Forgue
 1928 Duthie, Sydney H., of Cairnbulg, Rathen
 1928 Edwards, James H., 6 Rubislaw Den South, Aberdeen
 1928 Ellis, William, jun., Kinclune, Glenkindie, Alford
 1928 Falconer, William A. (North Eastern Agricultural Co-op.), Bannermill Place, Aberdeen
 1928 Farquharson, John, Loanhead, Logie-Coldstone
 1928 Ferguson, William, Boytana, Fyvie
 1928 Ferries, Charles A., West Learney, Torphins
 1928 Ferries, James, Burnside, Kintore
 1928 Ferries, John (Northern Co-operative Society, Ltd.), Loch Street, Aberdeen
 1928 Findlay, Leonard, Mains of Blackhall, Inverurie
 1928 Forbes, Allan, Tillybin, Kintore
 1928 Forrest, James (Messrs Wilson & Son), John Street, Aberdeen
 1928 Forsyth, Theodore, Gowan Bank, Port Elphinstone
 1928 Fowle, Douglas J., Millhill, Longside
 1928 France, Randal H. S. (Wm. Gray & Co.), 9 Desswood Place, Aberdeen
 1928 Fraser, Alexander T., Bridges, Kinnoir, Huntly
 1928 Fraser, John M. (Northern Co-operative Society, Ltd.), Loch Street, Aberdeen
 1928 Gardiner, James B. (Caledonian Milling Co.), 9 Westburn Drive, Aberdeen
 1928 Gaul, James, Whiteashes, Turriff
 1928 Gibson, Thomas, Cloghill, Countesswells
 1928 Gilbert, Francis, Newmill of Fintray, Cothal, Dyce
 1928 Gilbert, James, Gallowhill, Alford
 1928 Gilbert, William, Home Farm, Breda, Alford
 1928 Glass, James, Balloch, Forest of Birse, Aboyne
 1928 Gordon, Commander A., Bourtie House, Inverurie
 1928 Gordon, John, Cairnbanno, New Deer
 1928 Gordon, William, Union Bank, Inverurie
 1927 Grant, John, jun., Auchenhive, Whiteashes
 1928 Grant, John S., Skillymarno, Strichen
 1928 Grassick, Charles, Cushieston, Wartle
 1928 Grassick, William, Harestone, Inch
 1928 Gray, Fred J., 108 King's Gate, Aberdeen
 1928 Green, John R., Collyhill, Inverurie
 1928 Halkett, George, Fortrie, Turriff
 1928 Hall, James, Cranna, Rothie-Norman
 1928 Hamilton, Brigadier-General John H., of Skene House, Dunecht
 1928 Harper, Alexander, jun., Old Inn, Inch
 1928 Harper, Lewis (Cooper & Harper), The Square, Inch
 1928 Hay, Archibald B., 30 Bridge Street, Aberdeen
 1928 Hay, James, Garcock, Milltimber
 1928 Hay, Major Malcolm Vivian, of Seaton, Aberdeen
 1928 Hector, George, Mameluah, New Machar
 1928 Hector, William H., Corsehili, Bucksburn (after 28th May 1928—Upper Anguston, Peterculter)
 1928 Henderson, William, Chapel Hall, Ellon
 1928 Hendry, Alexander, 1 Balnaille Street, Turriff
 1928 Holmes, Harry A., of Fairfield, Aberdeen
 1928 Howie, George, V.S., 4 Albyn Place, Aberdeen
 1928 Hunter, Alexander, Northside, Wartle
 1928 Hutcheon, William, Ordley, Auchterless
 1928 Hutchison, Alexander, Danestone, Woodside, Aberdeen
 1928 Ingram, James, Cairntradlin, Kinellar, Kinaldie
 1928 Innes, Edward, Bruntstane, Huntly
 1928 Innes, Robert, Wrangham, Inch
 1928 Irvine, Mrs Dorothy J. F., of Drum Castle, Drumoak
 1928 Johnston, Harry, Gilmorton, Udny
 1928 Kemp, William C., Haddo, Methlick
 1928 Kerr, Duncan, jun., Aquhorsk, Kinellar
 1928 Killoh, William, Murryfold, Turriff
 1928 Kirk, Robert C., Home Farm, Glen Tanar, Aboyne
 1928 Kissach, George Webster, 62 Osborne Place, Aberdeen
 1928 Kynoch, John, Leys, Tarland
 1928 Laing, John, Pittendreich, Keig
 1928 Laing, Peter, 82 High Street, Inverurie
 1928 Lamb, Alexander, Collyhill, Wartle
 1928 Law, John, Crichtneyade, Fyvie
 1928 Law, William W., Sunside, Rayne, Wartle
 1928 Lawson, William, Scotsmill, Tullynessle
 1928 Lawson, William, Woodlands, Dyce
 1928 Ledingham, John, Ordiefauld, Keithhall, Inverurie
 1928 Leith, James, 66 Queen's Road, Aberdeen
 1928 Leslie, Alexander E. H., Graystone, Alford
 1928 Lind, John M., Overton, Keithfield, Old Meldrum
 1928 Lockhart, Daniel, Aldie House, Huntly
 1928 Lovie, James, Pitnunie, Monymusk
 1928 Low, William H., Central Auction Mart, Aberdeen
 1928 M'Caw, John R., Manager, Home Farm, Douneside, Tarland
 1928 M'Donald, William, jun., Parkside, Old Meldrum
 1928 Macfarlane, Duncan, Mains of Pitmedden, Oyne
 1928 M'Intosh, James, Merchant, Forgue
 1928 M'Intosh, Sinclair, Gowanlea, Kintore

1928 Mackay, Daniel, Oldmill, Turriff
 1928 Mackay, William, Scatterty, King Edward
 1928 M'Kenzie, Lewis, Nother Ruthven, Tarland
 1927 Mackenzie, Major D. W. O. D., Balmoral Estates Office, Ballater
 1928 Mackie, Bruce, Milton of Noth, Gartly
 1928 Mackie, John, Coullie, Udry
 1928 M'Knight, John G., West Balnakettle, New Machar
 1928 MacLachlan, Captain D., Moss-side of Letter, Dunecht
 1928 M'Petrie, James, Balfour, Aboyne
 1928 M'Pherson, William, Culdrain, Gartly
 1928 Maitland, Adam, 71 Hilton Terrace, Aberdeen
 1928 Marr, Alfred, Pettymuck, Udry Station
 1928 Marr, John, 62 Hamilton Place, Aberdeen
 1928 Marshall, Allan, Castle Fraser Estate Office, Kemnay
 1928 Martin, Fred, St Dunstan House, Mintlaw
 1928 Martin, George, High Street, Inverurie
 1928 Mason, Robert P., 15 Dee Street, Aberdeen
 1928 Massie, Albert James, Lairshill, New Machar
 1928 Massie, Hugh, Lochgreens, Dyce
 1928 Massie, Thomas A., East Cairnhill, Culsalmond, Inch
 1928 Matheson, Allan, Strathbogie Mart, Huntly
 1928 Mearns, James, of Aboyne, Pitstruan House, Aberdeen
 1928 Melvin, John, Templand, Inch
 1928 Middleton, Peter, North Gellan, Coull, Aboyne
 1928 Middleton, William, Bridgefoot, Monymusk
 1928 Milne, Charles, Concraig, Countesswells
 1927 Milne, C. N. G., Pettymuck, Udry Station, P.O.
 1928 Milne, John, 148 Union Street, Aberdeen
 1928 Milne, John, Upper Affleck, Dunecht
 1928 Milne, Peter, Wicketslap, Daviot, Old Meldrum
 1928 Milne, William J., 251 Union Street, Aberdeen
 1928 Mitchell, George, Sanquhar, Gartly
 1928 Mitchell, George W., Troupsmill Farm, Drumblade, Huntly
 1928 Mitchell, James, Oldtown, Rothney, Inch
 1928 Mitchell, Peter, East Drungowan, Leslie, Inch
 1928 Mitchell, Robert, Home Farm, Kinmundy, New Machar
 1928 Mollison, Hugh, Cluny Estates Office, 16 Union Terrace, Aberdeen
 1928 Morris, David, Factor, Estates Office, Dunecht
 1928 Morrison, John, Newcraig, Daviot, Old Meldrum
 1928 Nicol, James, Little Newton, Inch
 1928 Niven, Alexander, M.R.C.V.S., 18 Jackson Street, Inverurie
 1928 Norrie, Alexander, Cairnhill, Turriff
 1928 Ogston, James, Fintray Mills, Kinaldie
 1928 Paterson, Alexander, Blankets, Old Meldrum
 1928 Paterson, George, Nether Comlisy, Forgue
 1928 Paterson, W. E. Moncrieff, of Tilliefour, Kemnay
 1928 Patterson, James (Sellar & Patterson), 146 Union Street, Aberdeen

1927 Patterson, James C., 13 Market Street, Aberdeen
 1928 Petrie, Lewis, Tillykerrie, Inverurie
 1928 Philip, Alexander, Wester Fowllis, Alford
 1928 Philip, John, Mill of Lumphart, Old Meldrum
 1928 Pittendreich, Alexander C., Kirkton, Fraserburgh
 1928 Pittendreich, Robert, jun., Newseat, Fraserburgh
 1928 Presley, George M., Braiklay, Tarves
 1928 Presley, James, The Village, Methlick
 1928 Ramsay, Francis W., Blackmill, Tarland
 1927 Reid, Alexander B., 83 Gray Street, Aberdeen
 1928 Reid, Duncan, Craskins, Tarland
 1928 Reid, Francis, Greystone, Dinnit
 1928 Reidford, Gordon, Baldyquash, Wartle
 1928 Reith, George, 44 Rose Street, Aberdeen
 1928 Rennie, John Milne, The Rowett Research Institute, Buckaburn
 1928 Robertson, Alexander B., Foresterhill House, Aberdeen
 1928 Robertson, Andrew, Newton, Wardhouse, Inch
 1928 Robertson, James, Kirkton, Coull, Aboyne
 1928 Robertson, J. W., Castlepark, Huntly
 1928 Robertson, Robert S., Coultercullen, Udry
 1928 Robertson, William, Mains of Cairnbarrow, Glass, Huntly
 1928 Robertson, William, Sunnyside, Drum-oak
 1928 Roger, Erskine, Haddoch, Huntly
 1927 Ross, John B., Mains of Auchterellon, Ellon
 1928 Scott, James (Messrs Scott & Son), 483 Union Street, Aberdeen
 1928 Simpson, Angus, Clifton Cottage, Camhus o' May, Ballater
 1928 Simpson, George B., Union Hotel, Turriff
 1928 Singer, Richard J., Kittybrewster Mart, Aberdeen
 1928 Smith, Alexander F., Secretary, Royal Northern Agricultural Society, 89 Union Street, Aberdeen
 1928 Smith, Fred, Pitlichie, Monymusk
 1928 Smith, James, Glack, Migvie, Tarland
 1928 Smith, James, Mains, Skene, Dunecht
 1928 Smith, John, Dalwhing, Aboyne
 1928 Smith, John, Inver, Monymusk
 1928 Smith, Major John T., Drums, Newburgh
 1928 Smith, Peter, Mains of Asloun, Alford
 1928 Smith, Peter T., Thornhill, Monquhitter
 1928 Smith, Robert, 140 Hammerfield Avenue, Aberdeen
 1928 Smith, Robert A., Netherhall, Inch
 1928 Smith, R. Laidlaw, Pittodrie, Pitcaple
 1928 Smith, Robert W., M.P., Crownallie House, Pitcaple
 1928 Smith, William H., Waterton, Pitcaple
 1928 Souter, Patrick, East Balbithan, Kintore
 1928 Spencer, John, of Bingham, Murtle
 1928 Stables, James, Bankhead, Clati, K-nethlamont
 1928 Stephen, William, 60 Hilton Place, Aberdeen
 1928 Stewart, James, Commercial Bank of Scotland, Ltd., Rhynie
 1928 Stewart, John, Auchnafay, Ballogie, Aboyne
 1928 Stewart, John, jun., Neuk, Dinnit
 1928 Stewart, William, Gowanlea, Bonnyton, Inch
 1928 Strachan, James, Waterside, Newburgh
 1928 Strachan, John, Auchrynie, Strichen
 1928 Stuart, John, Bucklerburn, Peterculter

1928 Sutherland, Captain Gordon, Tulloford, Old Meldrum
 1928 Sutherland, Mrs, Tulloford, Old Meldrum
 1928 Tait, Charles, Hotel Farm, Tarves
 1928 Taylor, Alfred E. M., The Anchorage, Mintlaw
 1928 Thomson, Peter, South Auchininna, Turriff
 1928 Thomson, William Robertson, South Auchininna, Turriff
 1928 Thow, William, Forbes Estates Office, Alford
 1928 Tough, William, Luncarty Villa, Turriff
 1928 Turnbull, Allan, Smithston, Gartly
 1928 Wallace, Mrs Falconer L., Candacraig, Strathdon
 1928 Watson, Adam, Solicitor, High Street, Turriff
 1928 Watson, Alexander, Allathan, Udney
 1928 Watt, Alexander, Cairnhill, Insch
 1928 Watt, F. R., Balnastraid, Dinnert
 1928 Watt, Henry, Netherton of Balquhain, Inverurie
 1928 Watt, James, Millbank, Udney Station
 1928 Watt, Robert, Mosstown, Logierieve
 1928 Watt, William, Broomhill, Dunecht
 1928 Watt, William, Home Farm, Druminoir, Rhynie
 1928 Webster, George, Mains, Inveramsay, Inverurie
 1927 Webster, William, Newton, Rainnieshill, Newmachar
 1928 Whyte, A. Burnett, 12 Dee Street, Aberdeen
 1928 Wight, Wallace, Mill of Saphock, Old Meldrum
 1928 Will, George, Westertown, Rayne, Insch
 1928 Will, James, Broombrae, New Machar
 1928 Wilson, Eric, Mains of Arnage, Auchnagatt
 1928 Wilson, William, Mid Pitglassie, Turriff
 1928 Wishart, Alexander, Hill of Fiddes, Udney Station
 1928 Wood, Alexander, jun., Fortune Green, Aberdeen
 1928 Young, Gregor, Bogie Cottage, Huntly
 1928 Youngson, Alexander, Hillside, Echt
 1928 Yule, Alexander, Auctioneer, Huntly
 1928 Yule, James B., Bogie Street, Huntly

BANFF

1927 Chisholm, Miss Elizabeth Maisie, Mayfield, Ladysbridge, Banff
 1927 Dickie, Charles, Commercial Hotel, Portsoy
 1928 Elder, Alexander, Lime Works, Grange, Keith
 1927 Fordyce, John, Silverford, Gamrie
 1928 Grigor, William, Road Surveyor, Maud
 1928 Hosie, John B., Fife Estates Office, Banff
 1927 M'Donald, John, Farm Manager, Home Farm, Drummuir, Keith
 1928 Smith, William, 40 Low Street, Banff
 1928 Weir, Alexander, Cornhill, Macduff
 1927 Young, Robert Gordon, Arradoul Mains, Buckie

FORFAR

(EASTERN DISTRICT)

1927 Arbuthnott, Captain the Hon. Hugh Robin Claud, Stone of Morpie, by Montrose
 1927 Leask, David M. R., B.Sc., Edinburgh and East of Scotland College of Agriculture, Prudential Buildings, Arbroath

KINCARDINE

1928 Alexander, John, Elrick, Muchalls
 1928 Anderson, William, Wardend, Durris
 1928 Booth, George, Mains of Pitarrow, Fordoun
 1928 Cowie, Alexander, Northern Agricultural Co., Banchory
 1928 Duncan, Patrick, Westerton of Pitarrow, Laurencekirk
 1927 Rennie, F. Y., Royal Hotel, Laurencekirk
 1928 Todd, Charles, Nether Mills, Crathes

6.—DUMFRIES DIVISION**DUMFRIES**

1928 Beattie, Andrew, Park House, Canonbie
 1928 Brown, J. C., Sundaywell, Dunscore
 1927 Cochrane, John, Byreholm, Thornhill
 1927 Davie, James, Castlemilk Home Farm, Lockerbie
 1927 Gillett, Arnold, Crawfordton, Monlaive
 1927 Home, Mrs M. A. Milne, Irvine House, Canonbie
 1927 Martin, Gilbert, Manager, Holms, Beattock
 1927 Readman, James, Milnton, Tynron, by Thornhill
 1927 Roddick, Henry B. (office address, 20 Murray Street, Annan), 95b High Street, Annan
 1927 Young, William, West Preston, Preston Mill, Dumfries

KIRKCUDBRIGHT

1927 Graham, John K., Mark Farm, Cree-town
 1927 Walker, W. L., Glenquicken, Cree-town
 1928 Young, Hugh M., 52 St Andrew Street, Castle Douglas

WIGTOWN

1927 M'Meehin, James, South Cairnweil, Sandhead
 1927 Wright, Thomas B., Auchleach, Sandhead

7.—INVERNESS DIVISION

CAITHNESS

- 1928 Campbell, Thomas Alexander, Baillie,
Westfield P.O., Thurso

INVERNESS

- 1928 Fraser, Donald, Invertromie, Kingussie
1927 M'Bean, John, Milton of Culloden,
Allanfearn
1928 Paterson, George A., Falls of Trum,
Newtonmore
1928 Watson, Mrs Grace Stuart, Aultna-
skiach, Inverness

MORAY

- 1928 Duncan, Alexander, Stynic, Fochabers
1927 Dunn, John, Findrassie House, Spynie
1927 Ellis, A. G. G., Shempston, Elgin
1928 Shand, John, Chapelford, Portgordon
(Morayshire)

ROSS AND CROMARTY

- 1928 Falconer, Robert, Teaninich, Alness
1928 Forbes, James, Culcraggie, Alness

SHETLAND

- 1927 Tait, Miss F. E., C.D.D., N.D.D., Agri-
cultural College Office, 67 Commercial
Street, Lerwick
1927 Taylor, Thomas, St Catherine's, St Olaf
Street, Lerwick

SUTHERLAND

- 1928 Muddell, Miss Ray, Gruids, Lairg

8.—BORDER DIVISION

BERWICK

- 1928 Allan, Thomas, Georgelield, Earliston
1927 Blair, Mrs, Foulden Goat Farm, Foulden
1927 Forrest, William, Boon, Lauder
1928 Hunter, Mrs, Anton's Hill, Coldstream
1927 Landels, Thomas Alexander, Oil Mill
Lane, Berwick-on-Tweed
1927 Mitchell, Alexander, Laverock Braes,
Reston
1928 Smith, Mrs Ida F., of Whitchester, Duns

PEEBLES

- 1927 Macdonald, J. O., Cumberlands, Eshiels,
Peebles
1928 Millar, George West, South Mains, Biggar
1927 Mitchell, William, West Loch, Eddleston
1928 Wilson, David R., B.Sc., M.R.C.V.S.,
D.V.S.M., Bellevue, Eddleston

ROXBURGH

- 1927 Domingo, Robert Knox, Martin's House,
Hawick
1927 Geddes, Norman MacLean Roy, The
Mill, Newstead, Melrose
1927 Hamilton, Robert Cranston, St Keiran's,
Melrose
1927 Roberts, James, White Hill Cottages,
Nenthorn, Kelso
1927 Scott, John, Thorneycroft, Aherum
1927 Steele, Thomas, The Green, Lillesleaf
1927 Wannon, Arthur Robson, Rowena,
Newtown St Boswells

SELKIRK

- 1927 Johnstone, Robert Aubrey, Gilmans-
cleuch, Etrick, Selkirk

ENGLAND AND WALES

- 1927 Alley, S. Eric, Great Hollenden, Seven-
oaks, Kent
1927 Bedford, Thomas, 1 Gresham Street,
Lincoln
1928 Bilton, Fred (The Vizgol Oil Refining
Co.), Ormskirk, Lancs.
1927 Bromet, John, Golf Liuks Farm, Tad-
caster, Yorks.
1928 Chatterton, George, 32 Cartfield Avenue,
Meersbrook, Sheffield
1927 Dewar, The Right Hon. Baron, of
Homestall, Dewar House, London
1927 Dickinson, Mrs W. E., Bolain Hall,
Morpetti
1928 Ellwood, Harold, Hill Farm, Crosby,
Maryport
1927 Farrant, Captain Ewan C., Ballakillin-
gan, Isle of Man

- 1927 HAMILTON, General Sir Ian, G.C.B.,
Lullenden, East Grinstead, Sussex
1927 Hardie, A., c/o Dodds & Stow, 55
Central Markets, London, E.C.1
1927 Harrison, Robert, Gainford Hall, Gain-
ford, S.O., Durham
1927 Henderson, Miss Marjorie, The Ridling,
Hexham
1927 Hooper, F. E., Manager, Mills & Co.,
Ltd., Widnes, Lancs.
1927 Irving, Robert Chrystal, Shenley Lodge
Ridge Hill, by Barnet, Herts.
1928 Kerr, John, Red Hall, Wigton, Cumber-
land
1928 Llewellyn, G. H., C.B.E. (G. Llewellyn
& Son), Haverfordwest, South Wales
1928 Macleod, Donald (Uveco Cereals),
Cunard Buildings, Liverpool

List of Members.

- | | |
|---|--|
| 1928 Ogle, Alfred, Hartshay House, Ripley,
Derby
1927 Osmond, K. R. (Osmond & Son, Ltd.),
Grimsby, Lines.
1927 Paterson, Alexander Buchanan, Shenley
Lodge, Ridge Hill, Barnet, Herts.
1928 Roberts, F. F., General Manager, British
Basic Slag, Ltd., Wellington House,
Buckingham Gate, London, S.W.1
1928 Rush, William, jun., Riddings Farm,
Longtown, Cumberland
1928 Sutton, L. Noel (Sutton & Sons), The
Royal Seed Establishment, Reading | 1928 Tedd, William C. (Uveco Cereals),
Cunard Buildings, Liverpool
1927 Thomlinson, E., Hall Farm, Hutton
Wandesley, Marston, Yorks.
1928 Thompson, Spencer, Southwaite Farm,
Cockermouth, Cumberland
1928 Watson, Robert J. P., M.R.C.V.S.,
Ministry of Agriculture, 7 Whitehall
Place, London, S.W.1
1928 Young, Joseph Henry. 38 Havelock
Street, Sheffield |
|---|--|

IRELAND

1928 M'Ilmoyle, Rev. R. J., Dervock, Belfast

THE COLONIES

1928 Burnett, John Rodger, B.Sc., P.A.S.I., Department of Agriculture, Khartoum, Sudan

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